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COMPUTERWORLD

20/20 vision



On the eve of his company's 20th anniversary, Microsoft Chairman Bill Gates last week held forth on a number of topics, including the Internet, the eventual merger of NT and Windows 95 code and the ongoing dominance of Intel chips. For the complete interview, see pages 28 and 29.

Sybase looks toward System 11 for rescue

By Dan Richman

Sybase, Inc.'s future is likely riding on the next release of Sybase SQL Server, the company's database engine, which is due out by the end of the year. And judging by the favorable reactions from a handful of beta users and development partners, its future looks bright.

Compared with past versions that were notorious for bugs and poor scalability, SQL Server 11 is far better at using multiple processors, easier to configure and more reliable, according to the consensus of these early users. It also loads data and runs complex queries faster, they said.

DBMS engines

"Sure, Sybase split its lip [with prior releases], but I believe they're on the right path to correct their errors," said beta user Albert George, director of information services at MCI Financial Services Group in Arlington, Va.

"On a scale of 1 to 10, 10 being the ultimate RDBMS, Sybase needs a 20 here," said Donald Feinberg, an analyst at Gartner Group, Inc. in Santa Clara, Calif. "The betas are raving about SQL Server 11, and we're cautiously optimistic it will be everything they say it is."

Sybase SQL Server is at the heart of a product family dubbed System 11 that is due by year's end. Also included in System 11 are a data indexer called Sybase IQ, a facility to allow SQL Server to run on massively parallel processors and a low-end relational database management system.

The SQL Server 11 feature receiving the highest praise from users is the ability to use multiple CPUs in a symmetrical multiprocessing machine.

The maximum number of CPUs over which earlier versions could effectively spread the tasks of loading data or processing queries was four. Now, at least eight processors can be used effectively, users said. John Bongiovanni, manager of database engineering at development partner Sun Microsystems Computer Corp., said Sybase has achieved its design goal of being able to use as many as 16 CPUs.

Sybase, *page 15*

Internet security woes inflated, experts claim

By Gary H. Anthes

Internet security is so shaky that commercial use of the 'net is neither practical nor wise.

Or is it?

The New York Times cautioned last week that the Internet may have to undergo a "time-consuming redesign" before it is ready for commerce. The newspaper based that startling proposition on an Internet posting last week that warned of security holes in the Network File System that runs on most Unix hosts.

COMPUTERWORLD ANALYSIS: **Internet security**

But Internet security experts and users, while acknowledging the risks as troubling and real, also said those risks are eminently manageable. Users also said they don't intend to rein in their plans for electronic commerce.

A vulnerability in NFS could enable a bad guy on a subnetwork to surreptitiously modify unprotected software that passes between two Internet parties via that subnet, said three researchers at the University of California at Berkeley in a posting to the comp.security.unix newsgroup.

To prove their point, the researchers set up a test in which they were able to intercept a copy of Netscape Communications Corp.'s Internet browser and make a tiny change in the software that sabotaged its encryption capabilities. "It is then trivial to snoop and decrypt all traffic from the browser to secure serv-

Internet, *page 141*

Details emerge on P7 chip

HP/Intel venture to ease users into 64-bit computing

By Jaikumar Vijayan
SAN JOSE, CALIF.

Intel Corp. will ease users into the world of 64-bit computing with a 32-bit version of its next-generation P7 microprocessor, according to sources at last week's Microprocessor Forum here.

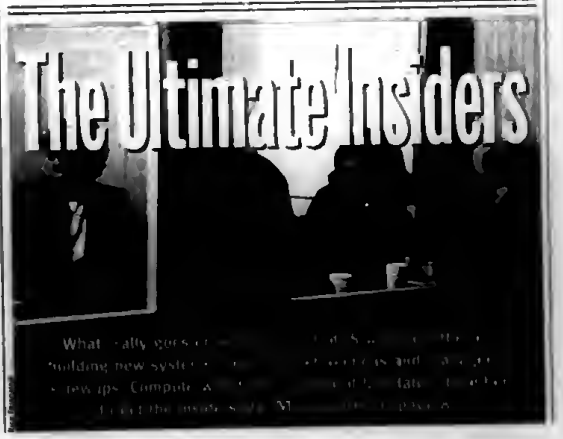
The 32-bit Intel chip will appear before the late-1997 debut of the full-fledged P7, which Intel is developing with Hewlett-Packard Co., sources said. Intel declined comment.

The P7 is a 64-bit chip that can run x86 and Unix applications equally well. Such a high-end chip is expected to let users widely scale Intel-based architectures, to mainframe-class application environments.

Under the ambitious plan, code-named Tahoe, Intel and HP are melding elements of Intel's predominantly complex instruction set computing, or CISC, architecture with HP's more advanced PA-RISC architecture.

The Tahoe architecture reportedly will in-

P7, *page 141*



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Inside Computerworld

Oct. 16, 1995

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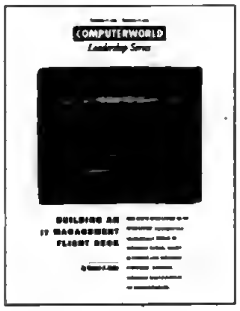
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Only one in five CIOs knows the size of his firm's IS asset base. Howard Rubin offers advice on improving measurement in the **Leadership Series, following page 40**

Choice Cuts

Frame relay has emerged from the alphabet soup of **high-speed transmission modes** *as the predominant choice of corporate users.* **Enterprise Networking, page 69**



Closer Look
FRAME RELAY



Dead links, long download times and information overload are Web page no-no's. Check out some good and bad Web page designs. **In Depth, page 104**

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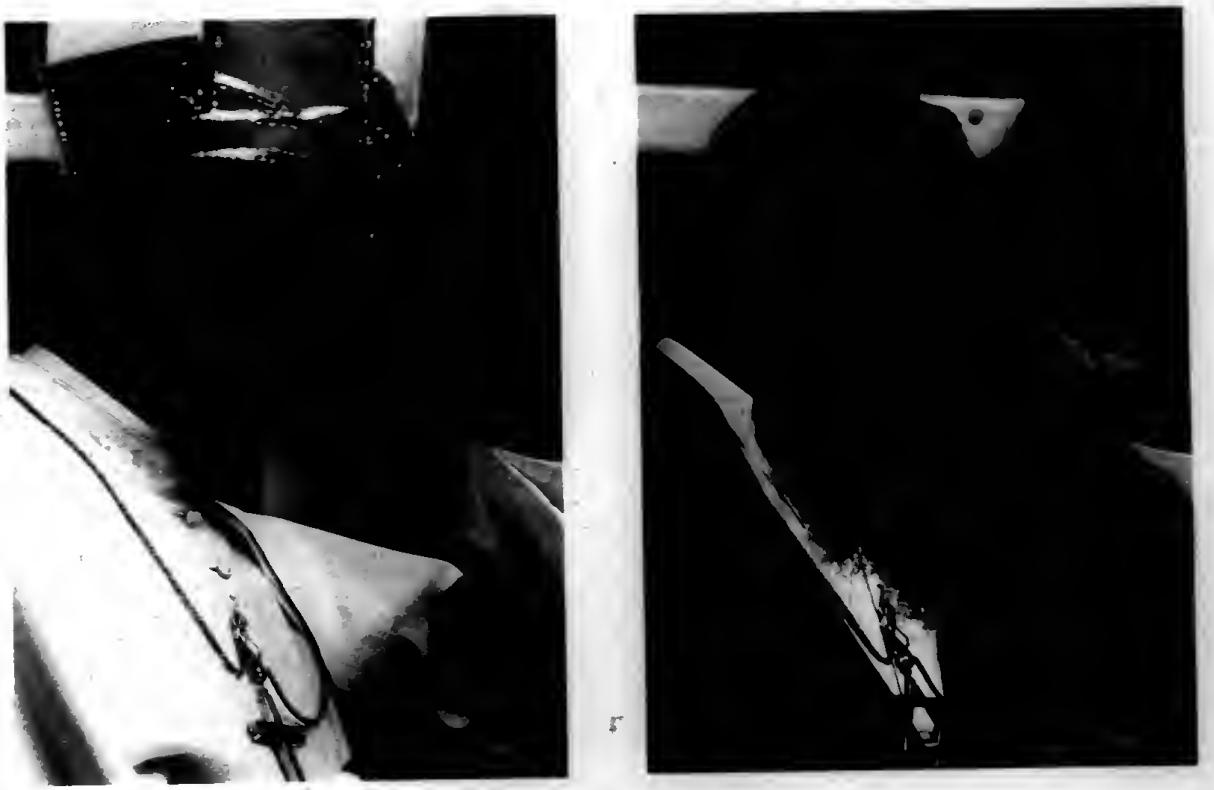
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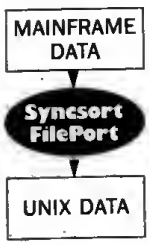
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Manzi exits; IBM names replacements

By Cheryl Gerber and Tim Ouellette

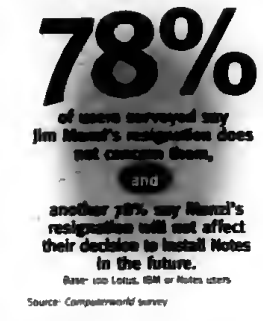
IBM late last week appointed two Lotus Development Corp. executives, Michael D. Zisman and Jeffrey Papows, to jointly lead the Lotus development unit in the wake of Lotus Chief Executive Officer Jim Manzi's sudden resignation.

Manzi's exit from IBM evoked indifference from large Notes customers, who appeared more concerned that his departure would incite further desertions of key Lotus personnel.

It may already be starting. Late last week, Robert K. Weiler, Lotus' senior vice president of the desktop business unit and international sales, also resigned.

Possibly seeking to assuage user concerns, Lotus issued a statement saying that Notes designer Ray Ozzie is "committed to the future of Notes." Lotus users interviewed last week were mostly worried that he would depart, negatively affecting the pending Notes Release 4.





Zisman was named executive vice president and chief executive officer. He joined Lotus after its 1994 buyout of SoftSwitch, Inc., where he was founder and president. Papows was made executive vice president and chief operating officer. He joined Lotus in 1993 from Cognos, Inc., where he was president and chief operating officer. Both will report to John M. Thompson, senior vice president and group executive of the IBM Software Group. Manzi had reported to IBM Chairman Louis V. Gerstner.

No effect

In an exclusive *Computerworld* survey of 100 information systems Notes users, 78% said Manzi's exit would not affect their plans or give them pause (see chart). When IBM bought Lotus three months ago, Manzi retained his position as CEO at Lotus and added the title of senior vice president at IBM.

Manzi, a tireless promoter of Notes, spent 13 often turbulent years at Lotus, coming to the startup as a McKinsey & Co. consultant. Founder Mitch Kapor liked Manzi's style and brought him on board, promoting him to president in 1984 before handing over the company in 1986.

However, Manzi's abrasive style and nontechnical background rubbed many the wrong way, including Wall Street, some of the many fired or departed executives, some former directors and some competitors.

Industry reaction, while not surprised, ran the spectrum from disappointment to relief.

"Notes will be a bigger product than it ever would have been with Lotus. This is the same guy [Manzi] who took a spreadsheet and an E-mail product that defined the industry and brought them to second place. Lotus has been losing money for years," said Giles McNamee, an avid Notes user and senior vice president at First Albany Corp. in Boston.

Lotus is not likely to lose money under IBM's watchful eye.

"IBM is beginning to provide the very significant R&D and marketing funds that were needed to make Notes the impact product it could have been," said John Hodge, chief information officer at NAC Reinsurance, Inc. in Greenwich, Conn.

But Manzi's strong backing of Notes and Lotus' identity with Manzi's style had some users worried about who would be appointed as his successor. Prior to IBM's announcement last week, which came at press time, a number of users laid out some of their concerns.

"There is a concern that the successor might not be a champion of Notes, but then IBM didn't throw money at Lotus to let it go down the tubes," said Jack Rathmell, a board member of the Worldwide Association of Lotus Notes Users and Technologists.

"A lot of what we do is directly related to the relationship you have with the corporation and its leadership," said Craig Goldman, CIO at The Chase Manhattan Bank NA. The New York bank was an early Notes user.

Manzi gave no reason for his sudden departure. "There was no proximate cause. This was a process. I wanted to see it through a bit of a transition," he said.

Manzi said he had met his goal to stay until Notes was successful in the marketplace and Lotus' employees and culture were protected (see chart).

NT gets cluster schedule

Microsoft plans phased rollout of Unix-like technology

By Stuart J. Johnston
and Jean S. Bozman
REDMOND WASH

Microsoft Corp. will add clustering technology to Windows NT in distinct phases that company sources last week said will begin within a year. The first phase will provide for "failover" clustering between two NT servers.

Microsoft will use clustering technology it acquired this summer from Digital Equipment Corp., but officials wouldn't say how long the rollout will take. The company's key goal is to let users perform NT clustering without the need for special or proprietary hardware.

Jim Allchin, senior vice president of Microsoft's business systems division, said the company would explain its clustering strategy in a technical white paper that will be sent out within a few weeks. "A lot of customers have come to us and asked what we were doing," he said.

Systems managers at General Motors Corp.'s Saturn automobile plant in Spring Hill, Tenn., have already started switching their manufacturing lines to NT. They said they eagerly await failover support.

"In manufacturing, you don't put in one [computer], you put in two because you can't have a production line stop," said Bruce Bemisderfer, manager of strategic planning and software development for manufacturing floor systems at Saturn.

Unix alternative

Clustering would allow NT to complete tasks formerly handled by high-end Unix servers. "The immediate attraction is [that] it seems to offer a lot of headroom to NT as a real enterprise server base," said Bill Schimoler, vice president of global LAN services at The Chase Manhattan Bank NA in New York.

"Right now, if you're talking about an enterprise server, you've got no choice. You bite the bullet and suffer the grief of Unix," Schimoler added. The bank has more than 200 IBM OS/2 servers and 85 Unix servers worldwide, but Unix handles most of the high-end enterprise databases not running on mainframes, he said.

In failover clustering, one machine in a pair of clustered servers will be able to take over the other's tasks if that machine fails, Allchin said.

He said Microsoft will deliver failover clustering "pretty soon," while sources inside the company said it could be delivered within a year.



Microsoft has already pulled a few key developers from the NT operating system's kernel code group to work on the clustering project, company officials said.

The later appearance of a comprehensive clustering capability would allow customers to gang together as many machines as they want —even computers based on different microprocessors, Allchin said. That's important because Unix symmetrical multiprocessing machines include up to 32 processors, and NT systems can't scale that high yet.

The final phase will remove the need for clustered NT servers to be located next to each other and will let users distribute NT servers down the hall or across a campus for disaster-recovery purposes. But that is likely to require the use of high-speed Asynchronous Transfer Mode networks to avoid network slowdowns, Microsoft executives said.

David McGoveran, president of Alternative Technologies in Boulder Creek, Calif., said he believes the clustering technology will land squarely in Microsoft's Cairo operating system, the follow-up to Windows NT 3.5 due next year. Allchin said users can expect more clustering capabilities in future NT releases. They also can expect some cluster features to appear in between NT releases, he said.

"Windows NT has a number of features that have not yet been made available," McGoveran said. "[The lack of] those features limits Windows NT's utility or usefulness in the enterprise server marketplace."

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IS managers eye video server pros, cons

By Jean S. Bozman

Video servers took center stage last week as IBM and Sun Microsystems, Inc. announced software and hardware designed to propel real-time video out of the conference room and down to the desktop.

Yet the promise of on-demand video training and storefront kiosks is offset by information systems concerns about strained network bandwidth and personnel issues in labeling, archiving and managing the digitized videos.

Some IS managers said subnetworks might have to be established and special video managers hired to monitor video updates to servers. This new IS job category would combine database administration and network management skills.

Wave of future

But even as they think about the pain of rewiring their offices to handle the technology, IS managers also see great potential in video servers.

"This stuff isn't that far off," said Mike Prince, director of information services at Burlington Coat Factory Warehouse Corp., a retail chain in Burlington, N.J. "For training, it's going to be big news in the next two to three years. I think it's likely we'd be running video streams to people in the building."

Other uses would include storefront kiosks with videos of the retailer's clothing being modeled, he said, and on-demand home video shopping.

IS managers at The Chase Manhattan Bank NA and CS First Boston in New York said their users already receive real-time video feeds that land on financial traders' workstations. But installing dedicated video servers would require changes in networking systems, they said.

"The amount of data you'd have to transmit to the client to keep full-motion video moving along would impact the other real-time data we get, such as market data," said Jim Swanson, vice president of distributed operations at CS First Boston's Fixed Income Trading Technology unit in New York.

Swanson said a separate data network for video would likely be in order. "It would require another subnet," he explained. "We already have two [subnets] connected to every workstation. We'd have to have a third."

Prince also is thinking of upgrading wiring to desktops, adding Ethernet switches "so the wiring to the work area is adequate to support the [data] load."

Industry analysts said video server traffic would be intense. "The way the network is utilized is different," said Dan Kusnetzky, an analyst at international Data Corp. in Framingham, Mass. "Instead of having small requests and data transfers, this would be very large continuous streams of data."

Types of support

To deal with this issue, Sun is working with several firms to provide network switches that would redirect video traffic. Sun said its system would work with 10Base-T LANs, 100M bit/sec., or Fast, Ethernet and Asynchronous Transfer Mode networks. IBM is providing support for high-speed networks and Token Ring and Ethernet LANs.

The video server technology introduced by Sun and IBM is based on standard-issue Unix servers. Sun added patented technology to control the broadcast of video streams to user desktops, while IBM added a layer of video server software on top of its AIX 4.x Unix operating system.

There may be more planning and thinking than actual deployment in the short term, unless large corporations already have 100M bit/sec. fiber-channel networks to allot to the technology. One of the first likely uses, analysts said, would be dedicated training where servers deliver video-on-demand to groups of five to 20 people. That way, video traffic wouldn't affect the rest of a firm's data network.

Pilot projects that use video servers may come online first, followed by network switching upgrades, analysts said. "It's going to be a big deal down the road," said Bill Moran, a research analyst at D. H. Brown Associates, Inc. in Port Chester, N.Y. "Nobody's going to sit there and twiddle their thumbs for five or 10 minutes, waiting for a video to download."



IBM serves up video

IBM's Starworks for AIX ships video to Windows PCs, Apple Macintoshes and Unix desktops

Video server software	Price	Availability
6M bit/sec.	$5,170	November
12M bit/sec.	$10,100	November
25M bit/sec.	$17,245	November
50M bit/sec.	$28,745	December

Sun's MediaCenter Server line ships in December

Product	Throughput rate	Starting price
Sun MediaCenter 5	50M bit/sec.	$29,995
Sun MediaCenter 20	100M bit/sec.	$62,995
Sun MediaCenter 1000E	400M bit/sec.	$279,995

Vendors will match wits, platform options at Summit '95

NT tools will debut at annual showcase; Shoot-Out draws blanks from HP

By Patrick Dryden

Next week's Enterprise Management Summit '95 will afford network administrators the opportunity to watch a vendor shoot-out that pits rival platforms against various network and systems problems.

The conference, which is focused on ways to gain control of complex client/server environments, will also feature a new wave of simpler, object-oriented management tools.

For example, appearing at the show will be integrated suites of object-oriented tools said to streamline management tasks as well as the first enterprise-capable monitors based on Microsoft Corp.'s Windows NT that will extend support capabilities beyond a staff's Unix gurus.

Show of strength

The Summit Shoot-Out, a rare public competition among management platform vendors, will let evaluators compare how each tool set handles problems they face daily. Participants will be judged on how well their configuration manages defined scenarios involving a mixed bag of staffoos, servers, applications, LANs, protocols, internetwork gear and wide-area network (WAN) connections.

Users are hungry for such information because about 70% of networked organizations plan to adopt an enterprise network and systems management platform within the next 18 months, according to research by Gartner Group, Inc., a consultancy in Stamford, Conn.

"We're looking for a platform to give us a big-picture view of our distributed environment, so we can get away from [having to have] lots of separate tools that manage different products," said Matthew Maguire, manager of end-user technology at Domino's Pizza, Inc. in Ann Arbor, Mich.

One newcomer to the platform wars will attempt to prove itself next week with software available for the first time and even plans to manage the parent company's global network from its booth on the show floor. Bull HN Information Systems, Inc., which now has a U.S. presence in Billerica, Mass., will launch a mature object-oriented management suite used at about 400 sites throughout Europe.

Intensive training

A feisty Digital Equipment Corp. will challenge established Unix platforms at the Summit Shoot-Out with its brand-new Polycenter Manager on NetView for Windows NT. A product manager claims it is "the first industrial-strength management system with an interface familiar to any Windows user."

Cabletron Systems, Inc. also will show Windows NT and Unix flavors of its upcoming Spectrum 4.0 software, which will be formally introduced this week after a summer of previews.

Vendor teams have worked months to prepare for a dozen scenarios that challenge their ability to detect defective hubs, phantom stations, excess traffic and other problems administrators face, said Rick Sturm, a show adviser and management technician at US West Communications, Inc. in Denver.

No-show

This year's Summit Shoot-Out won't include market leader Hewlett-Packard Co. HP withdrew its OpenView product from the competition, saying the expense and effort required to participate in the Summit Shoot-Out isn't worthwhile.

However, the Summit Shoot-Out is "absolutely meaningful" to Maguire because Domino's is evaluating OpenView and IBM's SystemView suite.

"I can see how well and how easily each package works in a complex, real-world environment instead of singly attacking one problem or device," Maguire said.

But he said HP is "losing a lot of credibility by not putting their product where their mouth is."

Real-world test

Leading management vendors – minus HP – will compete while showing how they handle typical problems with networks, systems and applications in a client/server environment during next week's Enterprise Management Summit. Scenarios include the following:

Managing assets	Managing faults
Discovering network devices Documenting hardware and software Finding phantom stations	Identifying defective hubs Alerting WAN link failures Preparing trouble tickets
Coping with emergencies	**Other challenges**
Excess traffic Memory errors Runaway processes	Distributing software Managing applications



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Smaller can be better

Artisoft's LANtastic for Win 95 targets branch office users

By Bob Wallace

Artisoft, Inc. last week announced LANtastic for Microsoft Corp.'s Windows 95, which it said will let users at small sites access and share files and printers with Windows-, DOS- and OS/2-based PCs on a LANtastic network.

Robust security is a key feature of the 32-bit client-and server version of the network operating system. Companies now can provide different levels of network access to administrators.

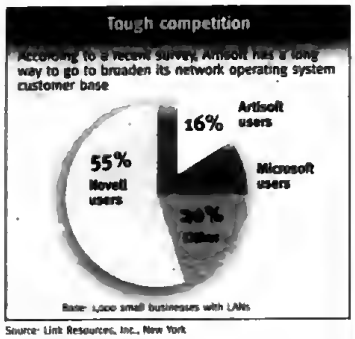
Users are excited about the support of multiple operating systems. "The cross-platform support is a very valuable feature for us because we have a 42-node network with several different servers," said Dave Gondreau, vice president nf MIS and operations at Pimco, Inc., a financial products marketing firm in Milwaukee. "We want them to work in concert."

Goudreau is alpha-testing the planned 32-bit LANtastic client software and plans to use the server software soon. Artisoft said both software packages will ship in January.

Another change is that the number of access levels in the software has been boosted from one in LANtastic 6.0 to four in LANtastic for Windows 95. That means admioistrators can separately create accounts, set file privileges, assign disk resources and set printer access.

Companies could provide only networkwide access to administrators with past versions of LANtastic.

Analysts lauded Artisoft's decision to support Windows 95, which will enable its target customers — small businesses — to take advantage of that support as oeeded.



Source: Link Resources, Inc., New York

"Small users are not going to migrate to Windows 95 overnight," said Abhijeet Rane, a senior analyst at Link Resources, Inc., a consulting and research firm in New York. "instead, it's going to be a gradual shift, where users already have Windows and DOS machines and want to add Windows 95 PCs at their own pace They should have no reservations about going with LANtastic."

Artisoft focuses exclusively on small business and branch offices of larger companies. Analysts say the network operating system vendor is running secood to Novell — which offers the same level of snpport — in this emerging market (see chart).

A new type of processor-independent scalable server hits the market. See page 41.

Tech Corps begins march to connect schools to the 'net

By Mitch Betts
WASHINGTON

In 1961, Presideot John F. Kennedy challenged Americans to join the Peace Corps and lend developing nations a helping hand. Last week, President Clinton challenged informatioo systems professionals to volunteer for the Tech Corps and aid the rollont of computers and Internet links to local schools.

High tech in education

Clinton likened the private sector program to a "high-tech barn raising," where schools, parents and businesses work together to meet his oft-stated goal to "connect every classroom to the information superhighway by the year 2000."

The challeoge is immense, however. Receot federal studies show that only 3% of public schools are connected to the Internet, 55% lack telephone lines for modems, 46% lack sufficient electrical wiring and 25% lack enough classroom computers.

Tech Corps volunteers will work with teachers and school administrators in their local communities to provide technology planning, snpport and training. High-tech businesses can provide funding, donate equipment and encourage employees to volunteer.

The program was founded by Gary J. Beach, president and chief executive officer of Framingham, Mass.-based Computerworld, Inc., publisher of this newspaper. "Our industry really hasn't passed its first social litmus test," which is bringing the benefits of information technology to the nation's schools, Beach said.

Tech Corps began with a 1994 pilot program in Massachusetts sponsored by that state's Software Council. Tech Corps launched a national rollout last week, establishing chapters in New Mexico, Colorado, Iowa, Illinois and Tennessee. Although Clinton endorsed the program, it doesn't get federal funding.

Jeanne Hayes, president of Quality Edncation Data, Inc., a research company in Denver, said, "Schools are dying for an infusion of technology. I can see a mentoring relationship truly helping the classroom teacher."

A conference to organize more Tech Corps state chapters will be held here Oct. 30. The nonprofit group can be reached at (508) 620-7749 or on the World Wide Web at http://www.ustc.org.

News Shorts

AT&T lines up executives for three new units

AT&T Corp., which is splitting into three independent companies by 1997, has named the top guns to lead that effort. Alex J. Mandl assumes the post of president and chief operating officer at AT&T, the $50 billion telecommunications service entity. Henry B. Schacht will lead the as-yet unnamed equipment company, which had $20 billion in sales last year. He is a longtime AT&T board member and former chairman of Cummins Engine Co. Lars Nyberg, chief executive officer at AT&T Global Information Solutions, will continue to lead that division.

Sybase opens Highgate

Sybase, Inc. in Emeryville, Calif., next year will launch a data warehousing product codenamed Highgate, . executives said last week at the International Sybase User Group European Conference in London. Highgate will provide on-line analytical processing with no need to create a separate data repository to run queries against.



HP ships object-ware

Hewlett-Packard Co. last week shipped HP Distributed SmallTalk 5.0, which supports the Object Management Group's Commoo Object Request Broker Architecture 2.0 object-interoperability standard. HP Distributed SmallTalk 5.0 is based on ParcPlace-Digitalk, Inc.'s VisualWorks. It can be nsed to write applications that work with IBM AIX and OS/2, HP-UX Unix, Sun Microsystems, Inc.'s Solaris aod Microsoft Corp.'s Windows and Windows NT platforms.

Help desk on the Web

Client/server software maker **Vantive Corp.** in Santa Clara, Calif., this week will announee software that lets users publish their Vantive customer information applications on the World Wide Web. Van Web software costs $25,000 per server.

IBM to resell Netscape gear

IBM in Armonk, N.Y., last week became a **Netscape Communications Corp.** distributor Starting in December, IBM will resell the Mountain View, Calif.-based Internet software company's Communications and Commerce Web servers with certain RS/6000 machines. Also included is Netscape's Navigator 2.0 hrowser, which entered heta testing last week.

Novell hires new CIO

Sheri Anderson, a 10-year veteran of **Charles Schwab & Co.** in San Francisco, became senior vice president and chief informatioo officer at **Novell, Inc.** last week. Anderson said she was drawn to Novell because of a tong-standing interest In bow companies can make the best use of networks. "The issue we face as IS professionals is to change the focus from the computer to the network and figuring out how to do that," she said.



Andersen lays Foundation

Andersen Consulting in Chicago has created a separate business unit for its Foundation CASE tools. The unit will have a staff of 600 devoted to sales, development and service. The company said it hopes the creation of the Foundation Software Organization will stomp out perennial rumors that it is abandoning Foundation CASE tools.

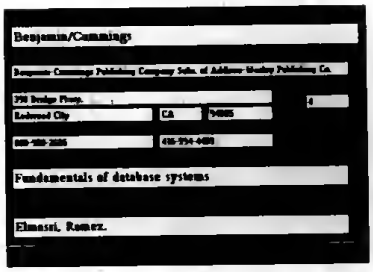
More layoffs at StorageTek?

Storage Technology Corp. in Louisville, Colo., indicated that more layoffs may be on the way as it tries to rebound from a string of earnings disappointments. With third-quarter profits again expected to be at the low end of Wall Street projections, StorageTek said it is "accelerating our consideration of all options for improving [financial] performance." More details are expected later this month when the company reports its third-quarter earnings.

SHORT TAKES A global software licensing agreement between **Computer Associates International, Inc.** and **Electronic Data Systems Corp.** was expanded to include the products that CA took over after its acquisition of Legent Corp. ... **Blue Sky Software Corp.** next week will roll out SmartHelp OLE control, which simplifies building context-sensitive help into Windows applications created with Microsoft's Visual Basic and Visual C++. The product will cost $499.

Database Developer Productivity Comparison

Visual Basic



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```
Sub PubPubID_Change ()
Dim SavePlace As Variant
Dim SQL As String
If Loading Then Exit Sub
PubsTitles.Clear
PubsAuthors.Clear
SQL = "Select distinct Title from Titles"
SQL = SQL + " where titles.PubID = " &
        PubPubID.Text
DataCtl(PubsList).RecordSource = SQL
DataCtl(PubsList).Refresh
Do While Not DataCtl(PubsList).Recordset.EOF
  PubsTitles.AddItem
        DataCtl(PubsList).Recordset(0)
  DataCtl(PubsList).Recordset.MoveNext
Loop
If PubsTitles.ListCount > 0 Then
        PubsTitles.ListIndex = 0
SQL = "Select distinct Author from Titles,
        Authors"
SQL = SQL & " where Titles.AU_ID =
        Authors.AU_ID and "
SQL = SQL & " titles.PubID = " & PubPubID.Text
DataCtl(PubsList).RecordSource = SQL
DataCtl(PubsList).Refresh
Do While Not DataCtl(PubsList).Recordset.EOF
  PubsAuthors.AddItem
        DataCtl(PubsList).Recordset(0)
  DataCtl(PubsList).Recordset.MoveNext
Loop
If PubsAuthors.ListCount > 0 Then
        PubsAuthors.ListIndex = 0
End Sub
```

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3 DRAG AND DROPS



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DG goes with Intel flow; users laud plan

By Neal Weinberg

Data General Corp. next week will showcase its first Intel Corp.-based product: a Pentium-powered server that runs DG's Unix operating system and Microsoft Corp.'s Windows NT.

Users cheered DG's decision to jump from the Motorola, Inc. 88000 chip to Intel, saying the new boxes will be cheaper and faster and will offer more applications. "We're embracing it with open arms," said Jim Linville, MIS director at High Industries, Inc. in Lancaster, Pa. "It's a good strategy."

High Industries, which is in the construction and real estate business, is moving from DG's proprietary MV system to a Motorola-based Aviion machine.

In a couple of years, the company will look to upgrade to Intel-based machines, Linville said, adding that he expects the commodity nature of the Intel chip to translate into cost savings.

Cost is just one benefit of the move, said Michael Goulde, an analyst at Patricia Seybold Group in Boston. It also allows DG to extend support for Windows NT, which was not possible with the Motorola chip.

And being on "an industry standard platform" should answer users' complaints about the lack of applications, Goulde said.

Steve Pounds, president of the North American Data General Users Group, said customers will expect new applications to be ported to Intel boxes.

The challenge for DG is to help users through the migration period. "It's got to be as quick and painless as possible," Goulde said.

"I can't wait to test-drive one," said Tim Boyer, data processing manager at Denmon Tire Corp. in Cleveland. Boyer said he has decided to buy an Intel-based Aviion sight unseen next spring. He said he will accept a Pentium but will take a P6 model if DG has one out by then.



Steve Pounds: *DG users will expect new applications*

"As far as I'm concerned, it means I'm running in the mainstream," said Boyer, who has a proprietary MV system purchased in 1983.

Boyer said the advantages are speed, price and the compatibility that comes with being on the Intel platform. "I can run commodity peripherals. That's the name of the game," Boyer explained. "This is exactly what the user community has been asking for."

Not everybody is salivating over the new machines. Kevin Broadway, vice president of information systems at Paging Network, Inc. in Plano, Texas, said he has plenty of room for growth on his existing Aviions. "Until our business requirement tells us to do something different, we won't go out and do anything different," he said.

Bob Ostrow, a partner at Bloomberg Financial Markets in New York, said he will pass on the four-processor Pentium systems but for a different reason.

"They're not strong enough for us," Ostrow said. He is waiting for the P6 versions to come out next year, so he can scale up to 32 processors.

Ostrow said the only possible ruh in the transition is binary incompatibility. DG is offering to help users recompile their programs, a procedure Ostrow described as "tricky but manageable."

Intel dominates the chip business, but Cyrix has a faster chip. See page 49.

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VT320 and TN3270
Kerberos authentication

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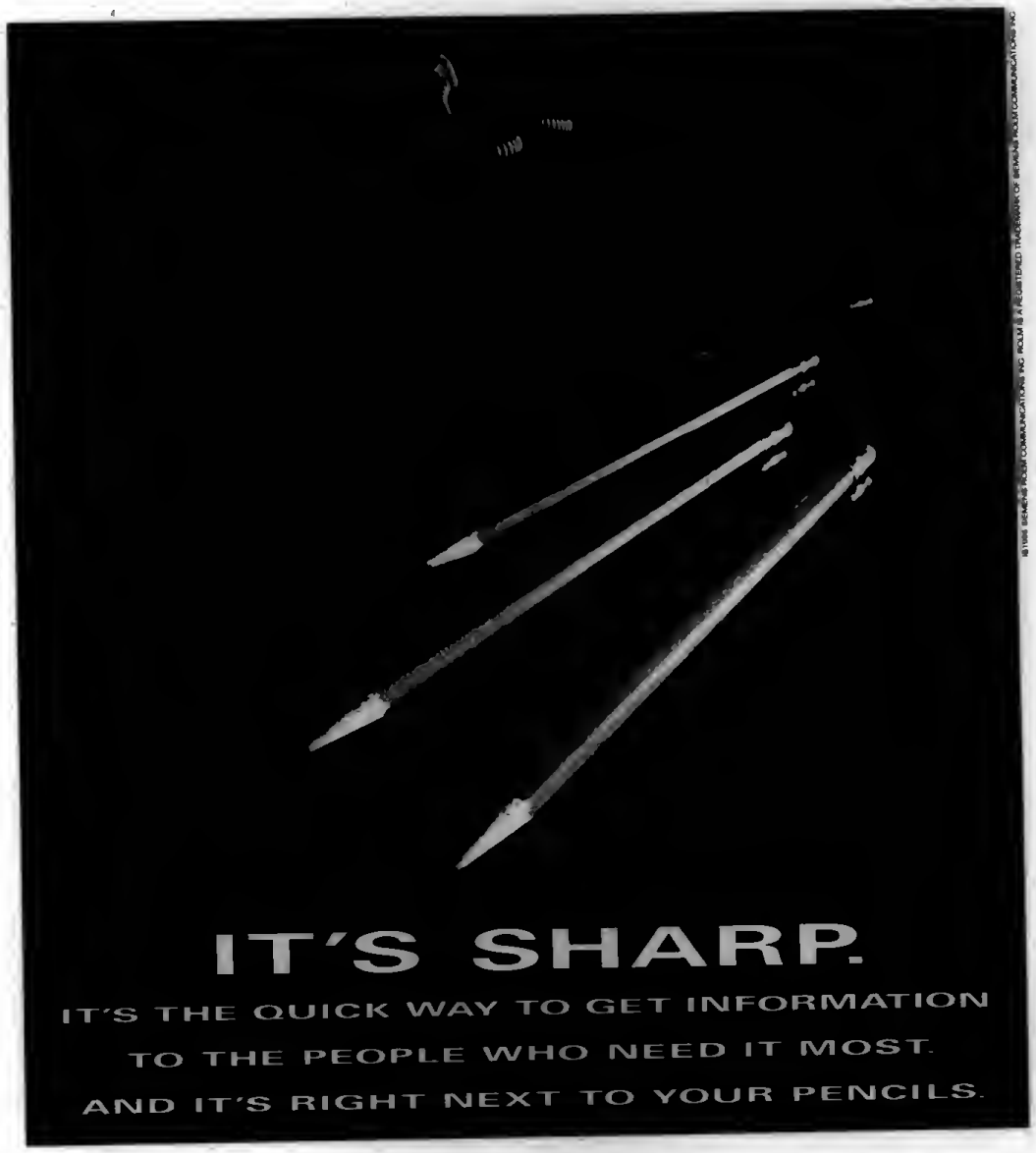
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Lexis-Nexis sticks with long haul to DCE

By Jean S. Bozman

Lexis-Nexis, the on-line data service formerly known as Mead Data Central, is preparing to launch a major distributed computing application this month.

The project will manage access to data retrieval and will allow users to access networked Unix servers from their Windows PCs without having to know how to navigate between the remote servers. The Unix servers then will relay data queries to the firm's mainframe databases in Dayton, Ohio.

A beta program begins this month, and a limited release of the service is slated for early next year.

Security, flexibility key

The client/server system is based on the Open Software Foundation's (OSF) Distributed Computing Environment (DCE) and will manage users' on-line sessions from the time they log on. DCE is a set of software modules that allow users to build distributed applications for mixed-vendor networks.

Prior to this, users logged on to IBM 3270 terminal sessions to access the mainframe data, using a character-based interface.

Front-end system security and flexibility were keys to the overhaul, which took three years. The DCE effort will reduce the time it takes for the company to create and deploy new data services, said James King, chief technologist at Lexis-Nexis.



Lexis-Nexis' James King *says switch to system will be gradual*

However, there won't be any abrupt switch to the new access system, King said. It will sit alongside older front-end systems, and Lexis-Nexis will continue to store hundreds of on-line databases on its mainframes.

To avoid a performance problem, Lexis-Nexis plans to add users gradually to the new system.

"When we get this ramped up, we're going to be facing very heavy traffic loads of over 2,000 simultaneous users," said David Skeen, a software engineer who managed the development of the DCE code by about 40 programmers.

Experts said the Lexis-Nexis DCE system is one of the best examples of an early DCE adopter that overcame initial difficulties to launch a production DCE system.

One early problem was how to shield programmers from the complexity of the OSF's original DCE 1.0 code. Developers adopted Hewlett-Packard Co.'s OO-DCE object-oriented tool kit, which ran on the site's HP 9000 Unix servers and generated C++ code.

Then, Lexis-Nexis had to port the HP-compatible code to run on a group of Sun Microsystems, Inc. Unix servers in the same DCE network.

The three-year effort hasn't gone unnoticed in the DCE developer community.

"It shows DCE is up to the task of something very crucial to a line of business," said David Richardson, a technology assessment manager at the University of Michigan in Ann Arbor. The university has several DCE projects under way.

Indeed, the road was sometimes bumpy for Lexis-Nexis and other early DCE adopters. Some of them even abandoned their DCE efforts, said Jonathan Chinitz, a DCE consultant at IntelliSoft Corp. in Acton, Mass.

Lexis-Nexis "had the vision thing and the guts to stick with it," Chinitz said. "And they invested a lot of [research and development] dollars early on."

Lexis-Nexis, a division of Reed-Elsevier PLC, employed dozens of programmers but wouldn't say how much money was invested in the project.

Other major sites, including MCI Communications Corp. and General Motors Corp.'s Cadillac division, also have deployed large-scale DCE applications recently, the OSF confirmed.

But Ted Hanss, an information technology manager at the University of Michigan who is active in DCE user conferences, said some of the best examples of DCE deployment have remained silent to retain their competitive edge.

Battlefield crowded in object war

By Frank Hayes

The battle to bring object technology to large systems began to heat up last week as Microsoft Corp. announced it will port its OLE object system to a wide range of non-Microsoft systems, including IBM's mainframe MVS.

IBM said it will license its object system to other vendors as well.

Object technology promises to drive down the cost of software by letting developers quickly assemble applications from software components, much as standardized chips pushed down the cost of computer hardware.

"What's happening with objects is mirroring what happened in the semiconductor industry," said Paul O'Neill, chief information officer at American Process Equipment Co. in Hingham, Mass.

But that standardization is much easier to achieve when the same type of components run on all of an organization's computing platforms from PCs to mainframes, vendors said. Microsoft said Software AG in Darmstadt, Germany, will port OLE to MVS and to several popular Unix servers, IBM's midrange AS/400 and large systems from ICL PLC in Bracknell, England, and Fujitsu Ltd. in Kawasaki, Japan.

The Software AG OLE products will be ports of Network OLE, a version slated to be part of the forthcoming Cairo version of Windows NT. Software AG will deliver Unix versions of Network OLE in mid-1997, with the mainframe version set to arrive in 1998.

Meanwhile, IBM and Tandem Computers, Inc. last week said Tandem will use IBM's object architecture, System Object Model (SOM), in its high-availability Himalaya servers by mid-1996. Cupertino, Calif.-based Tandem will use a forthcoming version of SOM that meets the Object Management Group's Common Object Request Broker Architecture (CORBA) Version 2, which allows object systems from different vendors to communicate. "Tandem is very late to the object party. IBM has very good technology, and SOM is a way for them to catch up fast," said John Navas, president of Navas Consulting Group in Dublin, Calif.

Object language

Object system — A software architecture that lets developers create applications by hooking together independently created components

CORBA — The Common Object Request Broker Architecture, an object system standard developed by the Object Management Group trade organization

SOM — The System Object Model, IBM's CORBA-compliant object system

Network OLE — The version of Microsoft's OLE object system that allows components on different computers to communicate across a network

A successful Tandem port will also erase doubts about IBM's object middleware working outside of IBM systems and should attract more attention from application developers, he said.

IBM is also seeking to license SOM to other vendors and may develop and sell versions of SOM for other major platforms, the company said.

Both Microsoft and IBM say offering their object systems on other vendors' platforms will make it easier for developers to write distributed applications using a single application programming interface.

But each vendor's approach has drawbacks. While Software AG will incorporate OLE into its middleware fourth-generation language products, the company doesn't currently plan to support commonly used mainframe languages such as Cobol and PL/1 with the new technology. That will make it more difficult to modify existing mainframe Cobol and PL/1 applications to connect with the object system. But in keeping with its long history in mainframes, IBM plans to support Cobol and PL/1. Also, next year's version of SOM will be able to communicate with object systems from Digital Equipment Corp., Hewlett-Packard Co. and Sun Microsystems, Inc.

For the Windows-dominated desktop, however, developers must use special SOM-enabled development tools or a software gateway between OLE and SOM, such as ObjectBroker from Digital, which supports both the OLE and CORBA object approaches.

A new tool pulls business rules out of mainframe code. See page 81.

Repositories on parade

IBM next week will begin shipping TeamConnection, its object-oriented software development repository that supports third-party tools.

The repository is a central database that stores information about applications under development, including source code, design information and project plans. Developers on a LAN can query the OS/2-based repository to gain access to all parts of a software development project, targeting either OS/2 or mainframe MVS, the company said.

Developers can automate the process of building and distributing applications and design an application once and then build it for multiple platforms, said Patrick Deville, new technologies consultant at Ciba-Geigy AG in Basel, Switzerland, who beta-tested the system.

IBM has integrated its own cross-platform development tools with TeamConnection and is talking to other development vendors about integrating their tools with the repository. TeamConnection also provides interfaces for developers to integrate their own tools.

IBM plans to port the repository to Unix and Windows NT and to extend it so it can build applications for Unix, Windows, mainframe VSE and midrange OS/400.

TeamConnection for OS/2 is priced at $1,980 per user and will ship Oct. 24.

—Frank Hayes



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Ameritech to resell rival data services

By Mindy Blodgett

Ameritech Cellular Services last week stunned the wireless data industry by revealing plans to resell the services of rival data transmission networks.

Ameritech, a Cellular Digital Packet Data (CDPD) carrier, confirmed it is hammering out reselling agreements with ARDIS Co. and RAM Mobile Data USA L.P. [CW, Oct. 9], providers of the wireless radio communications protocols that compete with CDPD. Ameritech officials said they hope to reach agreements by the end of the year.

There are 27 CDPD networks up and running nationwide

While it remains committed to the CDPD technology, Ameritech argued that such agreements make sense in the absence of a ubiquitous CDPD network. But others said that by hedging its bets and refusing to take sides, Ameritech will muddy the wireless picture, confusing and discouraging users.

CDPD is a means of sending data over the IP and the cellular infrastructure. RAM Mobile Data, in Woodbridge, N.Y., and ARDIS, in Lincolnshire, Ill., transmit data over different portions of the radio spectrum.

"We're the first to do this, but we think others will follow," said Bridget Howell, manager of wireless data communications at Ameritech Cellular Services in Hoffman Estates, Ill. "We don't anticipate demand for CDPD everywhere, and we want to get wireless up and running. So in those areas where we don't have coverage, we want to offer our users something."

You gotta do what you gotta do

Andrew Seybold, editor of the "Outlook on Mobile Computing" in Boulder Creek, Calif., praised Ameritech's decision. He said other regional Bell operating companies are considering similiar moves.

"Their attitude is: 'Whatever is good for the customer, we'll do,'" Seybold said. "I think that as CDPD is struggling, other technologies are taking over. Meanwhile, you have customers who want wireless."

But Iain Gillott, an analyst at IDC/Link in Austin, Texas, said RAM Mobile Data and ARDIS aren't interoperable with CDPD or with each other. "You would need all sorts of different modems and even with middleware, how would this work?" Gillott asked. "I don't get it. It doesn't solve a problem; it adds confusion. It can set back wireless 18 months."

Jeff Damir, a director at the AT&T Wireless Division in Kirkland, Wash., said the move could discourage users seeking homogeneous, seamless wireless connections.

"I can tell you this is not something AT&T Wireless would consider," Damir said. "We are aggressively building out CDPD networks, and that is our focus. This kind of reselling raises a lot of questions, technically and strategically."

RAM Mobile Data wouldn't comment on the talks. ARDIS said discussions are ongoing.

Mobile outlook brightens

Atlanta trade show to focus on success, advances in wireless arena

By Mindy Blodgett

It still isn't the year of wireless, but mobile and wireless users will find much needed news of success and true technological advances at this week's Mobile Outlook conference in Atlanta.

The conference, architected by wireless analyst Andrew M. Seybold, will feature the debut of Hewlett-Packard Co.'s long-awaited HP OmniGo 100 handheld organizer. The organizer will cost approximately $350 and is based on Geoworks, Inc.'s Geos operating system.



It will provide pen- and keyboard-based input capabilities and sport a hinged keyboard.

HP OmniGo is the first personal digital assistant (PDA)-like device for less than $400. HP will also offer a connectivity pack to provide access to a Windows-based PC for file management and synchronization. By the end of the year, HP OmniGo will work with SkyTel Corp.'s two-way paging device for two-way messaging.

Mike McGuire, an analyst at Dataquest, Inc. in San Jose, Calif., said HP's introduction of products in the sluggish PDA and handheld market shows the company's "willingness to test the marketplace."

"This is very aggressively priced for the functionality, and it shows they are willing to experiment," McGuire said.

Another product that will be demonstrated at the show is Fast Access, a new wireless communications program. The product is a result of the partnership among industrial handheld device maker Norand Corp., middleware maker Racotek, Inc. and RAM Mobile Data USA L.P., a wireless data communications network provider.

Pepsi-Cola Allied Bottlers in Hartford, Conn., recently selected Fast Access to improve its distribution, according to Paul Contois, manager of information systems at the bottler.

The bottler will spend about $55,000 for modems, devices and a new server. It hopes to increase sales productivity by about 25% by more efficiently routing and tracking beverage sales in 35 counties in Connecticut, Massachusetts and New York, Contois said.

"Rather than running to phones and keying in information, our route workers will be able to easily send and receive information on the Norand devices. Wireless communications... [and] the combination with the RAM network made sense for us," he said.

Fast Access will have a per-user cost of approximately $2,500 to $4,200 for the Racotek Keyware software, Norand device and RAM Mobile Data radio modem. RAM Mobile Data said per-user airtime costs will be between $20 and $93 per month.

Seybold said the new products may help offset disappointments such as the failure of Cellular Digital Packet Data (CDPD) vendors to more aggressively roll out networks. "The reality is that there will be no true winner; between CDPD and [personal communications services] and all the others, no one network will meet the design needs of all users," Seybold said.

Despite the bumps in the wireless road, Seybold said there was good news for the industry. "More and more companies and users are implementing remote access and wireless uses. That is the good news," he said.

Combo cards promise more functions for handheld devices. See page 51.

Next PerfectOffice suite delayed until Q1 1996

By Cheryl Gerber

Novell, Inc. will be late with its PerfectOffice for Windows 95 suite by as much as three months, but users aren't likely to hold that against the company unless the applications package ships later than that.

Windows 95 applications

Novell stated in August that PerfectOffice for Windows 95 would ship at year's end. But last week, in a report to financial analysts, the company acknowledged that the desktop suite for Microsoft Corp.'s Windows NT won't ship until the first quarter of next year.

Novell also reported that continued weakness in its software business would cause earnings in its fiscal fourth quarter to fall below analysts' projections.

Users and analysts viewed the delay in the same way.

"Some people will be disappointed, but [Novell] just released the first suite product in January 1995, and this is a major port going over to the 32-bit API set," said Karl Wong, an analyst at Dataquest, Inc. in San Jose, Calif. "Product development cycles typically run 12 to 15 months, so they are still in line."

"If it's only a little late, it'll be OK. A lot of people aren't deploying Windows 95 enterprisewide yet anyway. But if they slip into the second quarter, there will be major problems," he added.

"This doesn't affect us drastically because our department isn't jumping on the Windows 95 bandwagon that fast," said John McGee, director of training and support at the University of California at Los Angeles.

"If it slipped another quarter, it could pose some problems because we want to implement the suite at the same time we implement Windows 95," he added.

PerfectOffice will enter beta testing a week after Comdex/Fall '95 in November, said Mark Calkins, general manager at Novell's Business Applications Division.

"When you've got six major products and 350 developers testing and moving 3 million lines of code from 16-bit to 32-bit code, it's a major undertaking. It's taken longer than we expected," he explained.

Sybase looks to System 11 rescue

CONTINUED FROM PAGE 1

George said SQL Server 11 loads tables 2½ times faster than Version 10. Queries also execute that much faster, he said.

Peggy Taylor, senior vice president of application development at PeopleSoft, Inc., agreed, saying that complex queries, which access multiple tables, "run up to 100 times faster now."

Taylor said, "The quality is remarkably improved." PeopleSoft in Walnut Creek, Calif., is a Sybase development partner.

Until now, PeopleSoft has not ported its financial applications to SQL Server. It chose instead to make available only its less transaction-intensive human resources software on Sybase "because its query optimizer wouldn't process our queries in a timely manner," Taylor said. But PeopleSoft will port its financial applications to SQL Server 11, she added.

Stabilize Sybase

Sybase's System 11 is expected to help the company's shaky profit/loss record

PROFIT & LOSS

First quarter 1995	-$17.4M
Second quarter 1995	$6.8M
Third quarter 1995	$1.1M

Several technical innovations help improve performance. Data can now be retrieved in blocks ranging from 2K to 16K bytes rather than only in 2K-byte blocks as was the case in earlier versions. Further, one application can vary the amount of data it grabs on a query-by-query basis.

These innovations mean SQL Server 11 is better suited for a mixture of on-line transaction processing, for which small blocks are most efficient, and decision support, for which larger blocks are more appropriate.

SQL Server 11 also replaces a command-line configuration interface with a graphical interface, George said. Administrators can choose to see hundreds of configuration variables, depending on the level of control they want or need.

But Version 11 isn't perfect. The row-level locking feature is still missing. And the system does not allow for changes to correct too many configuration options while the server is running, said George Anderson, vice president of Enterprise Engineering, Inc., a systems integrator and beta partner in New York.

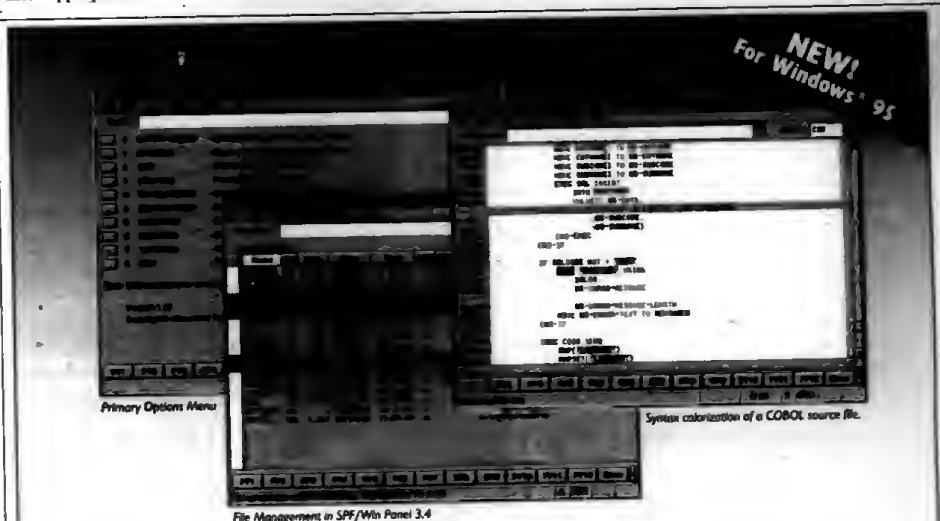
But the improvements augur good things for Sybase in the fiercely competitive RDBMS market. SQL Server 11 pulls Sybase even with Oracle Corp. and Informix Corp., George said.

With net losses and dwindling revenue through mid-1995, Sybase badly needs a major success.

SQL Server specifics

The following technical improvements have been made to Sybase's SQL Server 11:

- **Parallelized lock manager:** Lets multiple processors use the lock manager simultaneously, reducing the time users are locked out from data in use by others.
- **Private log cache:** Multiple users' changes to the database can be logged simultaneously rather than sequentially, eliminating a performance bottleneck.
- **Improved buffer manager:** Memory can be partitioned like a disk, giving database administrators better control over which data is most quickly accessible, which gives users better response times.



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Sequent systems to jack up SMP power

Company to accommodate those firms with increasing processing needs

By Michael Goldberg

As competitors roar about their symmetrical multiprocessing (SMP) prowess, industry pioneer Sequent Computer Systems, Inc. will unveil a systems architecture it says will cut rivals down to size.

Casey Powell, Sequent's chief executive officer, said the company's new systems architecture was designed to bring massive power to its SMP machines.

The systems will scale up to 252 Intel Corp. Pentium Pro microprocessors capable of processing 100T bytes of data, with a top estimated bus bandwidth of 32G byte/sec.

Speeding things up

The systems are due out late next year. They will use a high-speed interconnect to access memory distributed throughout a series of four-processor nodes, the company said.

The speed of the memory access across all the system's nodes — 2 to 3 microseconds to check up to 63 nodes — minimizes potential data bottlenecks and makes it possible for users to deploy applications as if they had one set of instructions.

The system's speed means users don't need to alter database management programs and other applications designed for shared-memory SMP machines, according to Sequent officials.

Because of the systems, Millipore Corp. can stay with Sequent as its processing needs increase, according to Roo Hawkins, director of information systems at the Bedford, Mass.-based manufacturing firm.



Sequent's CEO Casey Powell: *'We are so far along, those other guys are like paper tigers'*

"When we started with Sequent in 1990, we were just about as big in processing power as their platform" could handle, Hawkins said.

"Their movement in technology has now jumped ahead of our need. This architecture really extends the fence," he said.

Going forward

Observers said Sequent needs to advance its technology at a time when companies such as AT&T Global Information Solutions and Data General Corp. have introduced systems that commingle massively parallel processor power with SMP nodes and are set to use four-processor Pentium Pro boards in their systems next year.

Hardware vendors such as Hewlett-Packard Co. and Digital Equipment Corp., meanwhile, are touting the robustness of their SMP machines.

Sequent in Beaverton, Ore., has named the system architecture NUMA-Q, for nonuniform memory access technology for quads.

Like other Sequent systems, the machines will run on the company's Dynix/ptx Unix-based operating system. Pricing on the systems isn't available yet, but Sequent officials said their Unix systems fell into the $800,000 to $2 million price range.

Jay Bretzmann, director of worldwide systems research at International Data Corp. in Framingham, Mass., said Sequent's new architecture will benefit software developers and end users. "The majority of programs in the market are written for a single view of memory," which NUMA-Q enables, Bretzmann said.

Panda unveils processor-independent boxes. See page 41.

New Proginet software eases LAN-to-mainframe data transfer

By Bob Wallace

Proginet Corp. last week announced a new release of its Fusion software that will let users simplify LAN-to-mainframe bulk data transfer by centralizing authentication.

Fusion FTMS 2.3 runs on Microsoft Corp. Windows NT networks and IBM mainframes. Users install the software on local domain servers, which pass users' requests to a central, "master" domain server that authenticates the end user.

That way, users won't waste time searching for a server with the authority to establish a LAN-to-mainframe link. And eliminating that step simplifies administration.



Fixing the problems

Proginet officials claimed that before the new release, users found it "administratively impractical" to expand their NT networks beyond three or four domains. Each domain can comprise more than one server. This, they claimed, impeded the widespread deployment of NT.

Beta users gave the Fusion FTMS 2.3 rave reviews.

"We're very impressed with the product because it gives us a standard and easy-to-administer way to handle requests from many departments to upload and download legacy data on our mainframes," said Warren Kirby, a client/server specialist at a California-based computer component distribution firm.

Analysts said Fusion FTMS 2.3 is the first software package to offer users centralized authentication in large Windows NT networks.

"There's nobody in this extremely important market but Proginet," said Frank Dzubeck, president of Communications Network Architects, a consulting and research firm in Washington. "This software is an absolute necessity for users looking to scale their Windows NT networks across an enterprise."

But not all users with Windows NT networks need Fusion FTMS 2.3. Users with just a few workgroups aren't likely to find the current process painstaking.

Users who opt for the Proginet approach will need the new software on their servers and mainframes. The package was co-developed with Microsoft for the 32-bit Windows NT and Windows 95 operating systems.

The software was designed for use with MVS/ESA mainframes and is fully integrated with Microsoft's BackOffice and SNA Server 2.11 packages. It is shipping now for Intel Corp. and IBM RISC binaries.

The mainframe component of Fusion FTMS 2.3 ranges in price from $20,000 to $120,000, depending on the size of the host. A single copy of the server component for a standard Pentium processor costs $2,995.

Caere purchases rival in optical character recognition market

By Tim Ouellette

Call it a Caere package.

Caere Corp., the market-leading optical character recognition (OCR) software developer, last week announced it will buy ViewStar Corp. in a $40 million stock swap. ViewStar users said the deal gives the company much-needed money to continue developing its imaging and workflow product line.

ViewStar will act as a wholly owned subsidiary of Caere. The firm develops imaging and workflow systems that automate the movement and tracking of work items — usually document images — through a company.

Market gains

Caere has a history of buying its competitors. Last year, it acquired its major OCR rival, Calera Recognition.

"The big thing for ViewStar is the money and stability," said Frank Manci, document imaging coordinator at Colonial Savings, a mortgage and loan firm in Fort Worth, Texas. "We will get the stuff they have under development faster now with the cash infusion."

Future development efforts for ViewStar's software include improving distributed workflow capabilities and network load-balancing of work items, said David Yockelson, an analyst at Meta Group, Inc. in Stamford, Conn. In December, the company will ship ViewStar 4.2, which will strengthen Microsoft Corp. Windows NT support and add object-oriented interfaces for developers.

Analysts said the Los Gatos, Calif.-based Caere was motivated to diversify from low-margin OCR sales.

"OCR's value is steadily declining over time and is now more of a commodity," said Kristy Holch, an analyst at BIS Strategic Decisions in Norwell, Mass. Caere officials have been talking since last year about plans to develop other lines of business aimed at the enterprise, she said, and ViewStar's client/server imaging systems provide these.

ViewStar officials said they can now add Caere's strong OCR, indexing and forms software to the products, but the financial health of the Alameda, Calif., company was still uppermost in users' minds.

"Our claims-processing system doesn't lend itself to OCR," said Stephen J. Gohmann, director of information technology services at Zurich-American Insurance Group in Schaumburg, Ill. "From a product standpoint, this is not a big deal."

The imaging and workflow market has already seen major deals this year from FileNet Corp., Wang Laboratories, Inc. and IBM. Most observers expected ViewStar to do the same to keep up with these cash-rich companies. Caere and ViewStar together tallied $35 million in revenue halfway through this year.

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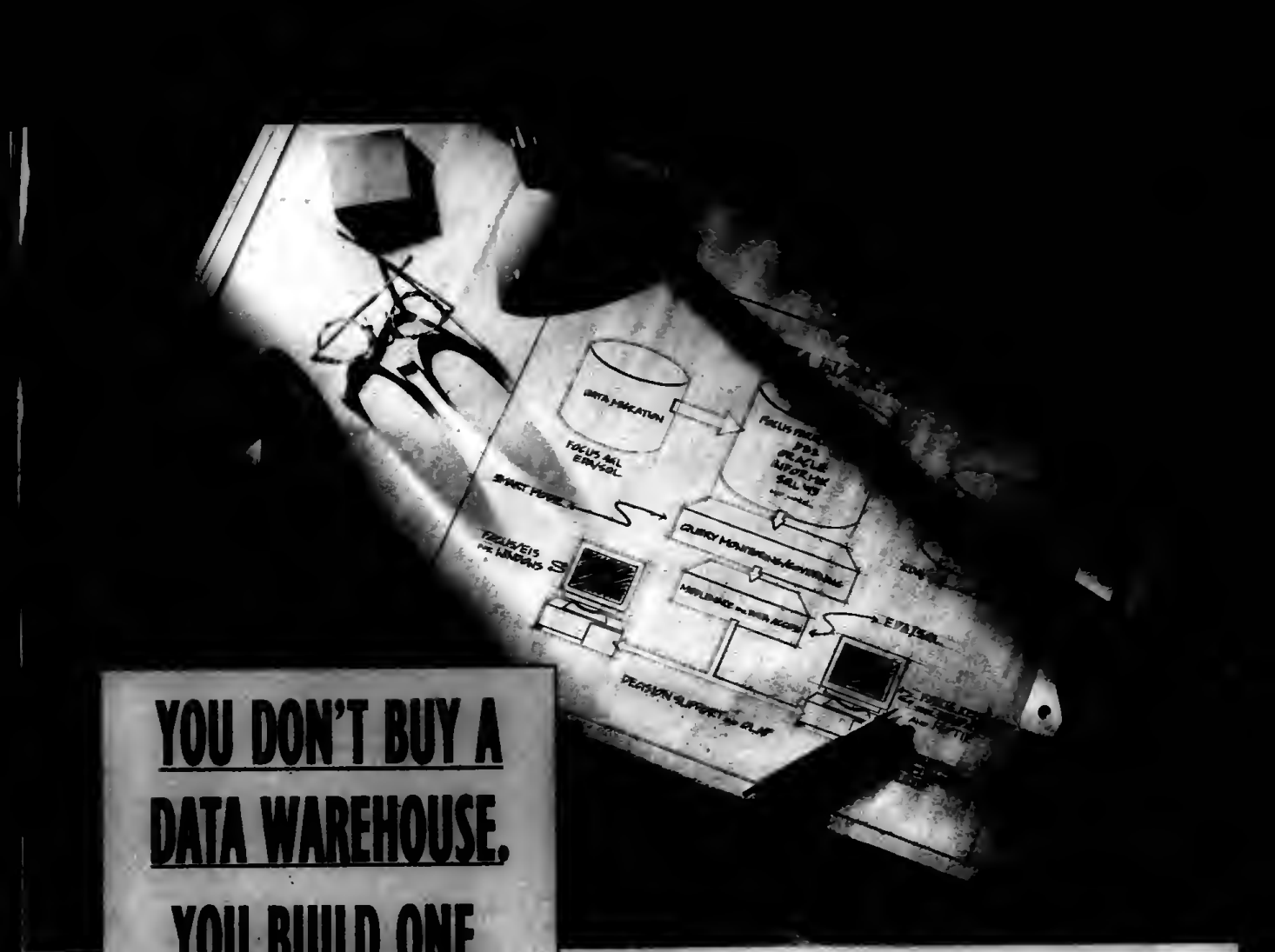
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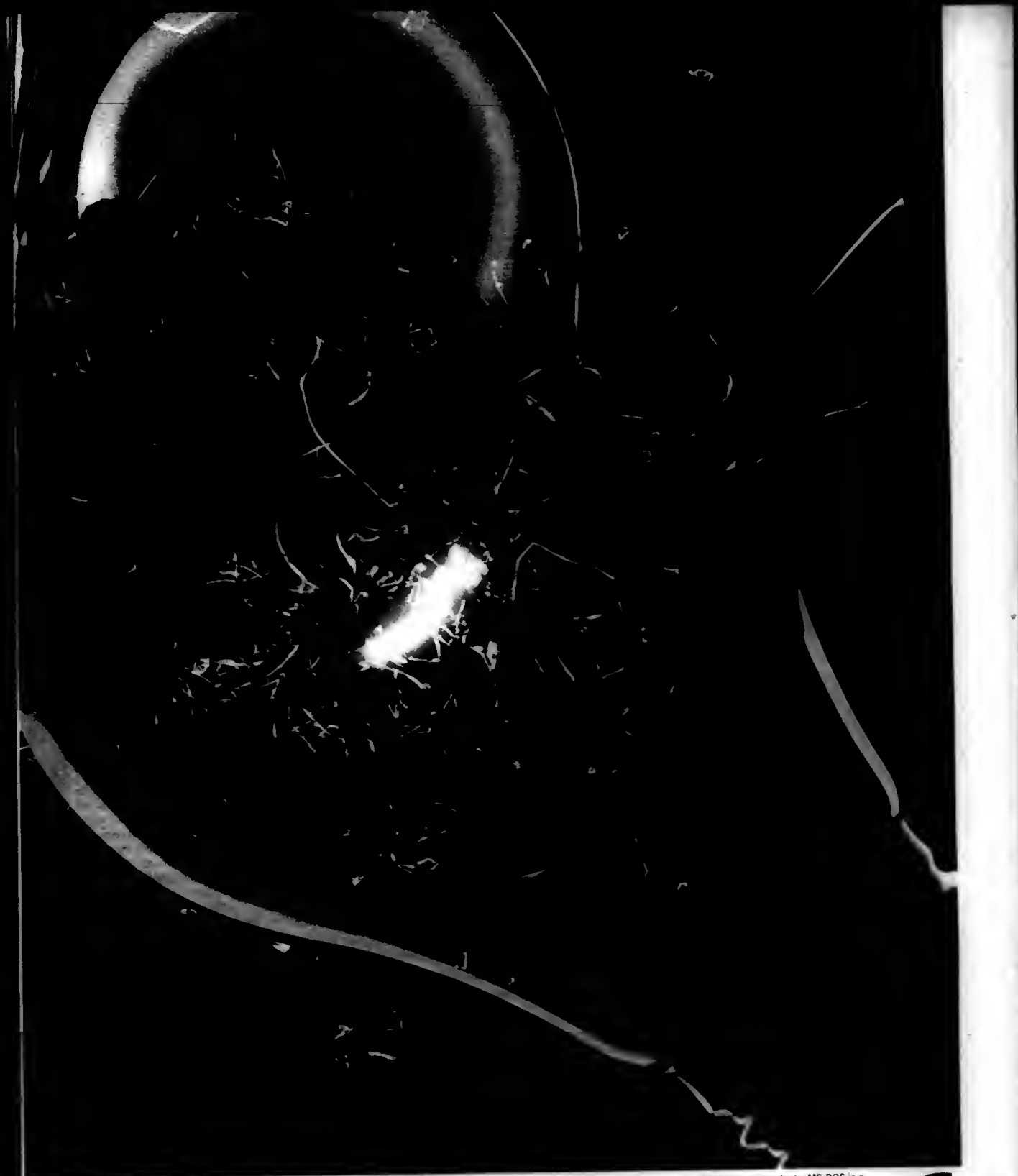
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Unisys steps beyond big iron role

Upcoming standard platform to run Unix, NT apps

By Neal Weinberg
ORLANDO, FLA

Unisys Corp. sought to reassure loyal mainframe users recently that it remains committed to big iron, even as it repositions itself as a company with a broader role to play in information management.

Toward that end, Unisys said it will introduce a standard mainframe platform, possibly as soon as next year. This standard platform would run both of the company's mainframe operating systems — the A and 2200 Series — plus applications based on Unix and Microsoft Corp.'s Windows NT.

Unisys said it plans to develop what it calls "heterogeneous multiprocessing," in which multiple operating systems can run on a common platform.

User reaction at the Unite conference here two weeks ago was somewhat guarded. Some said the strategy would bring additional applications to the mainframe environment. Others, however, worried about continued support for their boxes.

Paul Woitzel, director of network and technology integration at Blue Cross/Blue Shield of North Dakota in Fargo, said that by building machines with common components, Unisys will offer higher reliability, increased functionality and lower costs. "It's the wave of the future," he said.

Upward bound
Mainframe sales, as measured in MIPS, grow by 36% in 1993 and 40% in 1994, according to Unisys.

Conceptually, "one box, one cooperative environment" would enable users to buy the best systems without worrying about whether the applications they need run on that hardware platform, said Pat Thompson, president of Imagineering Partners, Inc. in Webster, Fla.

Hands off

But other users weren't focusing on future technology directions; they just don't want Unisys messing with their mainframes. Kevin Sneary, data processing manager at Siskin Steel & Supply Co. in Chattanooga, Tenn., said his A Series box is "unbelievably reliable." His strategy is to "ride that train as long as it will move you."

He said users have to "look down the road and be aware there might be a world without the A Series," as Unisys merges the A and the 2200 into one system. But Sneary said he doesn't want to move off the A Series until he is ready.

J. R. Kennedy, commander of the data operations bureau at the Hillsborough County Sheriff's Office in Tampa, Fla., said his supervisor recently asked him about moving to client/server. He has hundreds of applications on his Unisys mainframe and recommended an upgrade to a new Unisys box.

That type of loyalty is proving to be a double-edged sword for Unisys as it tries to reposition itself as a client/server and professional services company. Thompson said that effort is sometimes misinterpreted as a retreat from the mainframe.

Dewaine L. Osman, president of the Unisys sales and marketing group, told users last week that there has been "confusion" about the company's strategy. "We are not moving away from computers, and we are continuing to invest in enterprise servers," he said.

Unisys has invested $500 million on research and development this year, he added.

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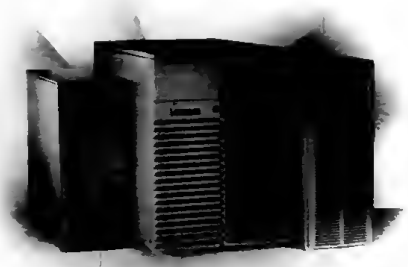
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David meets Goliath on the Web

Start-up weighs in with first multiserver tool

By Kim S. Nash

Tiny, 32-employee Vermeer Technologies, Inc. wants to play David to a whole pack of Goliaths in the Web development tools arena — and its slingshot looks formidable, users and analysts said last week.

Vermeer, a private venture-funded company in Cambridge, Mass., plans to start shipping today FrontPage, a tool kit that incorporates several programming and administration functions required for serious corporate application development.

Several influential players in the market, including Microsoft Corp., Oracle Corp. and ParcPlace-Digitalk, Inc., have announced plans to ship World Wide Web tools by early next year. But none appears to pack all the punches of FrontPage, several observers said.



Most notable, according to Geoffrey Bock, an analyst at Patricia Seybold Group in Boston, is the product's ability to work with several of the major Web servers, such as those from Netscape Communications Corp. in Mountain View, Calif., and Open Market, Inc. in Cambridge, Mass.

"All this stuff from Microsoft and Netscape and others — those tools are being designed to run with their own servers," Bock said. "People will have to buy both tools and servers from the same company," which limits user choices, he said.

FrontPage, which is priced at $695, has several features that are unusual to find in a single product. They include the following:

- Administrative capabilities for managing security and access to finished applications and servers.
- "WebBots" and wizards, which are preprogrammed bits of code, or agents, that help novice developers through routine application-building tasks.
- A graphical editor for creating Hypertext Markup Language code, the lingua franca of the Web.

Competition lagging

Aside from technical features, Vermeer has time on its side, said Jay Brodsky, a technology coordinator at Tribune Media Services in Chicago.

"I don't see any tangible competition yet, and believe me, I've looked," said Brodsky, who has been testing FrontPage for three months.

Tribune plans to use the product for two tasks. The publishing company wants to build applications for its Web site and create software for other newspaper companies that want to launch online publications, he explained.

But Vermeer isn't home free, according to a technology vice president at a large financial firm on the East Coast that is beta-testing FrontPage.

The product "is very capable, but there are still some things we'd like to see added before we make any major commitment," said the executive, who asked to remain anonymous.

For example, the product lacks a simple, automated method for linking existing data stored in relational and other databases to Internet applications built with FrontPage.

For now, developers must manually write scripts for connecting database information to the programs.

Vermeer plans to address database functionality by adding support for the Open Database Connectivity interoperability standard in the next release of the tool. That is due out late this year or early next year, said Charles Ferguson, chairman and co-founder of the 18-month-old company.



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MICROSOFT TURNS TWENTY

Gates unplugged



Microsoft Corp. was among the first PC software companies and remains one of the most successful survivors from the earliest days of desktop computing. The Redmond, Wash., firm will celebrate its 20th anniversary this month. In this exclusive interview, an expansive Gates talks with *Computerworld* senior editor Stuart J. Johnston about the future of computing.



Q: Did the exploding popularity of the Internet catch Microsoft by surprise?

A: Basically, no. Remember, the Internet is about free communication, which will transform the role of the PC more than anything else. What happened is that the price of communications came down. If you had tried to do the Web four years ago, the thing would break down incredibly. As it is, we are right on the edge of what works.

And so this is totally expected. It's the thing that has always made us optimistic about [our mission statement] "A computer on every desk and in every home." About two years ago, [our] people started saying, "Hey, there's something pretty incredible here." And we've really orchestrated our groups to focus on that. That's why we were able to ship [at the same time as] Windows 95 an Internet browser, TCP/IP and things like that.

Q: What major technology trends are coming?

A: There are three stages of connectivity speed. There is today's phone network, which is basically [28.8K bit/sec.]. We'll do enhancements where you can do voice and data over the same line. The next step is what we call midband. That's [ISDN] and cable modem. And then there's broadband.

Just to simplify things, there are also certain data types. There's text, still images, audio [and] video. On today's telephone lines — what I'm calling narrowband text — is fantastic and still images are adequate. On midband, still images are fantastic, audio is fantastic, and video is barely adequate. On broadband, video is fantastic, and, of course, everything else is fantastic.

Q: And when will we get to broadband?

A: There's no simple answer to that. In terms of every home in the nation having broadband connections that are cheap, that's 15 to 20 years away. If you talk today to cable and telephone companies and compare their predictions from three years ago, by now, millions of homes would have broadband. That didn't happen. [But] within a decade, you'll have millions of homes connected.

Q: Will the code base between Windows 95 and NT essentially merge?

A: Windows NT is not a static thing. We're constantly doing new work on NT. Today, Windows 95 runs on a 4M-byte system. But most people choose to have 8M bytes. We want our next major release [of desktop Windows] to run on 8M bytes, so we won't be able to wholesale adopt all of NT for that release.

Q: And that's in the 1997/1998 time frame?

A: "Not 1996" is what we say. So you won't have a total merger of the code bases, although there will be more shared. As you get to the next release, we'll probably be targeting 16M bytes, which will allow us to have total sharing. We'll probably still have two forms of Windows, but they'll both be totally based on NT.

Q: What kind of scalability are you considering for Windows NT over the next few years?

A: We are scaling really well on eight-processor machines at this point. A year ago, we got an OK on four-processor machines, but now, we are actually doing really well on these eight-processor machines. You get the general optimization we're doing ... the speed of the new processors and large memory, which means you aren't going out to disk as much. And then you get these multiprocessor systems and how we're exploiting those, and so all of these things are driving database performance of "PC" technology to levels seriously as good as the mainframe has ever been able to achieve.

Q: Two or three years ago, when the first RISC desktops arrived, you said that while you wanted to make sure Windows NT was available on those platforms, you still believed that, for the foreseeable future, the volume processor would be Intel. Is that still true?

A: I think it's more obvious to the world at large today. Intel has adopted totally and absolutely all the ideas about RISC technology. And people understand that compatibility isn't holding them back in a dramatic fashion. Clearly, Apple is quite successful with the PowerPC, and that has allowed Motorola to have enough volume to continue to innovate and do very good work. DEC has kept Alpha [as] their state of the art. Mips is still out there.

But Intel has executed very well, and the work they are doing with HP [incorporating the HP Precision Architecture into Intel's

FEB. 1 1975
Bill Gates and Paul Allen license Basic to MITS*, the manufacturer of Altair 8800. This is the first language written for a PC.
*Micro Instrumentation and Telemetry Systems



FEB. 3, 1976
Gates is the first to raise the issue of software piracy in his "An Open Letter to Hobbyists."

NOV. 26, 1976
Microsoft is the registered trade name listed with the Office of the Secretary of the state of New Mexico.

JUNE 18, 1979
Basic is announced for 8086 machines.

AUG. 12, 1981
IBM introduces its Personal Computer using Microsoft's MS-DOS 1.0.

MAY 2, 1983
The Microsoft Mouse is announced.



NOV. 10, 1983
Windows is announced.

JAN. 24, 1984
Microsoft ships Microsoft Multiplan, software to run on the Macintosh.

MARCH 13, 1986
Microsoft's stock goes public at $21 per share – today, the price is up to 87⅜ (as of Oct. 12, 1995).

APRIL 2, 1987
Microsoft OS/2 is announced.

OCT. 6, 1987
Excel for Windows is announced.



chip technology] is quite ambitious. So I'd say the exact same thing today that I've said in the past: We'll make sure that Windows [NT] is available on any popular chip technology. People don't have to worry about that as they invest in Windows. But for the foreseeable future, Intel architecture will certainly have the vast majority of the volume.

Q: When Windows took off, several competitors accused you of playing bait-and-switch with OS/2. What about that?

A: Everyone knew we were doing Windows first. Let's talk about OS/2 applications. Who ships the first OS/2 spreadsheet? Microsoft. What does Lotus ship? They do this thing, 1-2-3G, which is grossly inferior to 1-2-3. It's huge. It's slow. It's buggy. Who ships the first word processor other than DeScribe? We do. WordPerfect was more than nine months later. So who lost the most money doing OS/2 applications other than IBM on OfficeVision? Microsoft.

Q: In December 1993, you urged everyone to write applications to have them ready for when Windows 95 arrived. Even though Windows 95 was seven months late, Lotus and WordPerfect won't have their applications ready until next year.

A: Everybody's had more than enough opportunity to get applications out there and plenty of information about exactly what we're doing on this. There are a lot of people shipping Windows 95 applications. Not Lotus and WordPerfect. But I would hold up what we did for Windows 95, in terms of getting information out to developers [and] in terms of the timeliness, completeness and responsiveness, as exemplary.

Q: Why is Microsoft still so vital after 20 years?

A: It's the feeling that we could miss some new great thing that comes down. That energy is always there. IBM had all sorts of smart people, and they had every advantage. But they didn't focus on the right things. The history of our industry is the history of companies that came and went. That's something that we've watched, and to the best that we can, we'd like to avoid that.

Microsoft's 20th has pundits painting future fall from grace

By Cheryl Gerber

As Microsoft Corp. hits the 20-year mark this month, industry experts extoll its ability to bring desktop computing to the masses. Yet they also predict the company will stumble in the next decade: It's only a matter of how and when.

"There isn't any company in the history of the world that has continued growth unabated," said Mike Meyer, executive vice president of Cap Gemini America, Inc., an international systems integrator. "If you've got 80% of the market, how do you grow 30% to 40%?"

The debate swirls around what will cause Microsoft to stumble, however.

Many analysts and customers think it will be with the Internet, the ultimate leveler of the playing field. Others say Microsoft will slip as it moves from the comfort of the low-end desktop and consumer market and into the heart of the enterprise and wide-area networking.

And when it slips, there will be no shortage of competitors eager to give the company a push off its throne, said Priscilla Tate, executive director of the Technology Managers Forum International in New York.

"The biggest threat to the organization will come from warring factions within," Tate added. "Their leadership model is one of absolute power and control, which doesn't foster teamwork or loyalty."

"Microsoft has done an outstanding job helping to build an industry and create worldwide standards that benefit users and the industry," said Philippe Kahn, chief executive officer of Starfish Software, Inc. in Scotts Valley, Calif. Kahn is a former chairman of Borland International, Inc. "But in the next five years, the Internet represents an outstanding opportunity. The [companies] that will maximize the opportunity will be the innovators."

Microsoft's ability to innovate could be the key to its future success or downfall. While the firm's marketing talents are widely acknowledged, the degree to which the software giant has been innovative is in question.

"Microsoft has brought uniformity to the market," Meyer noted. "They've imposed a customer-driven set of standards and some innovation — but nothing the Macintosh and IBM



Brad Stacy

"The only way they'll stumble is if they become too arrogant."
— Edward Goldberg, Merrill Lynch Co.

haven't done. Microsoft just out-marketed IBM and Apple."

Whatever the reasons for Microsoft's success, they are good enough for financial services firms such as Merrill Lynch & Co. "Microsoft recognized that systems need to be shared and that software was its business, not hardware," said Edward Goldberg, executive vice president of operations, systems and telecommunications at the New York-based company.

"If Gates' genius continues — and I believe it will — and his company matures, then Microsoft will continue to deliver product of great interest to its customers," Goldberg said. His retail organization includes 25,000 PCs and workstations that run Windows NT. "We're a strategic partner of Microsoft's. They are wonderful to work with," Goldberg said. "The only way they'll stumble is if they become too arrogant."

But some believe bureaucratic malaise is inevitable at Microsoft, despite its reputation for fostering a free-wheeling, entrepreneurial corporate culture.

"At some point, if it continues growing, Microsoft will have to do something radical such as what AT&T recently did" with its break up into three separate companies, said Erik Iversen, director of application development services at Nabisco, Inc. "But there's a big difference between a $10 billion company and an $85 billion company, so it's probably not necessary any time soon."

Managing growth was another likely trouble spot cited by several users. "Bigness will eventually be a problem for Microsoft. As they get higher up in the architectural hierarchy — whether it's at the wide-area network or middleware [API] level — they will have some focus problems along the way," predicted Hank Philcox, chief information officer at DynCorp and former CIO at the Internal Revenue Service.

Still, users at large sites such as Allied Signal, Inc. in Columbia, Md., strongly believe in Gates' vision and plan on it. "I don't think Microsoft will lose its entrepreneurial spirit in the next decade," said Eric Singleton, director of information systems at Allied Signal. "Gates' vision is on target. While the company is branching out in new areas, they are the right areas for both the corporate and the personal environments."

Nov. 13, 1989
Microsoft and IBM agree to jointly develop OS/2 and other systems software to run on Intel's 386 and 486 processors.

May 22, 1990
Windows 3.0 is announced.

July 25, 1990
Microsoft reports revenue of $1.18 billion.

March 24, 1992
Microsoft and Fox Software announce they will merge.

Nov. 11, 1992
Beta versions of Windows NT ship.

March 30, 1993
MS-DOS 6.0 is announced and made available.

April 14, 1993
There are 25 million users of Windows.

June 1, 1993
Judge Vaughn R. Walker rules in favor of Microsoft in the Apple vs. Microsoft and Hewlett-Packard copyright suit.

Sept. 8, 1994
Windows 95 is announced, previously code-named "Chicago."



March 22, 1995
Microsoft and DreamWorks SKG announce a joint venture to produce interactive and multimedia technology. Steven Spielberg is one of the principals.

May 20, 1995
Microsoft and Intuit agree to terminate their planned merger.

June 16, 1995
U.S. Court of Appeals reinstates the 1994 antitrust settlement between Microsoft and the Justice Department.

Aug. 21, 1995
Judge Thomas Penfield Jackson signs the consent decree that prohibits Microsoft from charging a per-processor licensing fee.

Aug. 24, 1995
Windows 95 ships



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Computer Industry

Three-way split

Unisys to divide into separate units, cut $400M

By Neal Weinberg

In a reorganization that could lead to the eventual breakup of the company, Unisys Corp. last week said it will slash $400 million in expenses, conduct more layoffs and split into three business units.

The latest restructuring, which comes just before Unisys announces its third-quarter earnings, marks an about-face for the Blue Bell, Pa.-based company. Unisys' strategy for the past five years has been to integrate its traditional computer hardware business with its Andersen Consulting-style information services unit. The idea was to have a multidisciplinary sales force that would offer users a full package of services and products.

But Unisys found that the strategy didn't fly. The 3-year-old Information Services and Systems Integration unit, the fastest growing part of the company, was hampered by its affiliation with the product group. Potential customers worried that any solution the unit offered was just a way to push products, said Christine Ferrusi Ross, an analyst at Dataquest, Inc. in Westboro, Mass.

Ross said the strategy may have paid off in the long run, but the firm was under pressure to show immediate returns. And that wasn't happening. Unisys earned $565 million in 1993 but slipped to $100 million last year. Analysts are predicting a loss for the current quarter.

In response, Unisys Chief Executive Officer James Unruh decided to separate professional services from computer products and to give each unit its own sales and marketing staff plus its own profit and loss responsibility. "When it came time to put money down on a horse, he needed to put the money on the right horse," Ross said. And that is the consulting business.

Sales possible

John Curti, an analyst at Securities Corp. of Iowa in Cedar Rapids, said Unisys doesn't plan an imminent breakup but hasn't ruled out selling off parts of the business down the road.

The fact that the company has given each unit profit and loss responsibility makes it easier for potential suitors to determine the strengths and weaknesses of each unit, Curti said.

In a statement, Unruh said the reorganization provides the flexibility to explore new options, including "selective divestitures."

Loyal Unisys users are taking the latest reorganization in stride. "Here we go again," said Pat Thompson, president of Imagineering Partners, Inc. in Webster, Fla. "We've been through so many reorganizations, it's like people are numb."

She said the latest realignment appears to be focused on sales and marketing rather than on hardware product lines, so the immediate effect on the company's longtime mainframe users is expected to be minimal.

Curti said the reorganization may actually work out for the best. "It sounds like they're trying to free the companies up to do a better job," he said.



Ironically, when the joint presidents of the professional services unit quit earlier this year, analysts said it was because Unruh didn't give them autonomy.

"I'm disappointed [Unruh's reversal] didn't happen sooner. It would have obviated the need for a lot of departures," said Mark Hodges, an analyst at G2 Research, Inc. in Mountain View, Calif.

According to Ross, the reorganization should help the company's bottom line. She said the consulting business is growing fast, and the support services unit is winning business at the desktop and network levels.

Unisys steps beyond big iron role. See page 20.

Restrictions lifted on export of high-performance computers

By Gary H. Anthes
WASHINGTON

President Clinton hit a home run from Washington to Silicon Valley recently when he decided to substantially reduce restrictions on the export of high-performance computers.

According to an administration official, the action could boost the sale of U.S. computers abroad by $1 billion a year while greatly reducing manufacturers' export costs.

It is a windfall for computer makers, but domestic users will benefit as well, vendors claimed. "These exports help us continue a high level of R&D," said Scott McNealy, chief executive officer of Sun Microsystems, Inc. "This R&D . . . creates good jobs, [which, in turn,] promotes our national security."

The new rules, expected to be in place for the next two years, raise the computer performance level, above which export licenses are required. For countries friendly with the U.S., that level has been boosted from 1,500 million theoretical operations per second (MTOPS) to 7,000 or 10,000 MTOPS, depending on the country.

Meanwhile, the U.S.'s closest allies may now buy computers with virtually no restrictions (see chart).

MTOPS is a composite performance measure derived by the government. A 90-MHz Pentium processor from Intel Corp. is rated at 90 MTOPS, and a system from Digital Equipment Corp. with six 300-MHz Alpha processors is rated at about 4,200 MTOPS. The fastest supercomputer from Cray Research, Inc. is good for about 100,000 MTOPS.

A spokesman for Cray said the rules would free for export most of Cray's midlevel supercomputers and top-of-the-line machines from Silicon Graphics, Inc. and other vendors.

The Cray spokesman said that export restrictions that kicked in above 1,500 MTOPS often delayed sales by a year or more. And sometimes expensive security arrangements required by the U.S. government cost the customer more than the computer itself, putting U.S. vendors at an obvious disadvantage, he said.

"This decision will relieve U.S. computer manufacturers of unnecessary and ineffective regulations, which have often tied their hands while foreign competitors won major contracts or built their own systems," President Clinton said in a statement.

But those who want to maintain tight export controls said giving powerful computers to other countries will only help them to develop high-tech weapons that could be turned against the U.S.

A bipartisan group of members of the House National Security Committee had urged the president to leave export restrictions in place for now, in a letter to Clinton, committee members said that deregulation would lead to "weapons proliferation and new regional arms races with significant destabilizing consequences."

Industry officials argued that the MTOPS ratings are becoming less meaningful as it becomes possible to network less powerful computers that aren't subject to export controls into virtual supercomputers.

Bill Archey, president of the American Electronics Association in Washington, said, "The government is realizing that while it may be difficult to restrict the export of a high-performance computer, it is virtually impossible to restrict the export of high-performance computing."

New export limits for high-performance computers

Countries/Continents	Export restrictions
Western Europe, North America, Australia, New Zealand	None, but U.S. companies must keep records of shipments.
South America, South Korea, Eastern Europe, South Africa	No restrictions up to 10,000 MTOPS; export license required for more than 10,000 MTOPS. Additional safeguards required for more than 20,000 MTOPS.
India, Pakistan, former USSR, China, Vietnam	No restrictions up to 2,000 MTOPS; license needed for more than 2,000 MTOPS for military uses and 7,000 MTOPS for all others. Additional safeguards required above 10,000 MTOPS.
Iraq, Iran, Libya, North Korea	Computer exports not allowed.

Source: The New York Times



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Informix's Phil White on AT&T WorldMark Servers.

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Phil White, CEO, Informix Software



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Where's Nader?

Suppose you're a salesperson and you've just landed a job with a territory that puts you behind the wheel, speeding along various interstate roads, 20 hours or more per week. Your boss offers you a choice of cars, any one you want.

But there's a catch. Suppose car manufacturers have discovered a common, serious design flaw that, under certain conditions, will cause a car traveling at highway speeds to burst into flames. Don't worry. The manufacturers are paying bounties to anyone who can help them unmask the conditions that manifest the flaws — hopefully, before you do. Do you think you might consider another profession?



I really do applaud Netscape for its announcement last week that it will pay bounties to anyone who finds bugs in its Internet browser. That is so much better than the usual bug-fix methods the PC industry has favored, in which 1.) unpaid beta testers (ie: user guinea pigs) stumble onto bugs, 2.) they report them back to the vendors, who then 3.) quietly decide which are worthy of being fixed, all the while 4.) keeping the nature of the flaws to themselves.

Let's not pick on Netscape, but let's survey the Internet landscape a bit further. As reported in *The New York Times* last week, researchers at major think tanks on both coasts have reported serious design flaws in the Internet itself. Stripped of all the academic and technical mumbo jumbo, their statements and claims indicate that the 'net isn't yet a safe place to conduct commerce.

Then Sun chimed in last week with confirmation that its Java 'net environment has a bug or bugs that could cause system crashes.

What does all this say about the state of software quality, particularly software hawked by vendors claiming to be serious enterprise partners? It says you and your company would be smart to look with great circumspection at those who say the 'net is "commerce-ready." It isn't, and won't be for many, many months if not a few years.

Heed the warnings or, like our traveling salesperson, be ready to consider another profession.

Bill Laberis

Bill Laberis, *Editor in Chief*
Internet: *bill_laberis@cw.com*



Different definition of openness

I reacted in disbelief to "Nice try, but NT is not open" [CW, Sept. 18] by Richard H. Jaross and Michael Tilson until I saw that it was written by two people who make their living off of Unix.

Every definition of openness I've ever seen was designed to sell a different product.

Deal with these facts: Users aren't going to run Unix or the X Window System on their desktops; Microsoft's "dysfunctional Posix module" works as well as any Unix vendor's Windows module; thanks to Microsoft, we can appreciate TCP/IP because now mere mortals can configure; and, after 25 years, the shared development model has yielded an operating system that just got its hat banded to it by a 2-year-old fledgling.

The users are speaking, and "OS by committee" is too slow to market for our tastes.

Greg Battas
Indianapolis

Reactions prove his point exactly

In their letters to the editor [CW, Sept. 4], John Davis and Richard Gordon object to my article "The Silicon Ceiling" [CW, July 17] in a way that exemplifies the prejudice I wrote about.

Davis presumes that IS has to prove itself in ways that other professionals don't, and Gordon tries to dismiss the issue as whining. Sounds closed-minded to me. I couldn't have asked for better "rebuttals" to demonstrate my point.

Davis also writes that unless [an IS executive] wins the user's confidence, he won't be asked a second time. This is equally applicable to engineers, accountants and marketers. Why try to make it an albatross around the necks of only IS executives?

Gordon's objection is simply his assertion that some IS executives lack certain skills and that sometimes their projects fail. What's new? The same can be said for every other profession. These facts couldn't be used to support [the *Computerworld* CEO survey finding that] "48% of us would not consider appointing our senior IS person to a general management position."

Anthony Fedanzo
Vice president, IS
Harding Associates, Inc.
Novato, Calif.
ferrets@crl.com (Anthony Fedanzo)

Thumbs down for product review

From the start — "the product [Borland's Delphi] that compiles and runs fastest still may not win the corporate race" — to the finish — "Finally, it just wouldn't be a Microsoft product if it didn't include all of the extras at a price lower than the competition" — your review of Microsoft's Visual Basic ["Visual Basic shifts focus," CW, Aug. 28] was the most biased article I have read in a supposedly objective magazine in years.

Visual Basic certainly has some very strong points. Delphi's technology makes it one of the most notable introductions in the past year.

The products deserve to be compared. But this article does nothing for someone who wants to learn more about the latest release of Visual Basic or how it stacks up against Delphi.

Mark Brittingham
Flander, N.J.
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Too much focus on white noise

You state that Apple's marketing efforts are "barely audible compared with Microsoft's mammoth $200 million media blitz" [CW, Aug. 20].

I wonder how inaudible they would be if the computer industry news publications ignored the hype and concentrated on the facts relative to Windows 95 vs. Macintosh vs. OS/2 vs. Unix.

Brian Richardson
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41. Engineering, Scientific, R&D, Tech. Mgr.
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13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
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70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply)

Operating Systems:
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

App. Development Products ❑ Yes ❑ No
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65. Communications Systems/Public Utilities/ Transportation
70. Mining/Construction/Petroleum/Refining/Agric.
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Dist./ Retailer
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22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr. /PC Mgr., Tech Planning, Admin Svs.
23. Dir./Mgr. Sys. Development, Sys. Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Mgr.
80. Sys. Integrators/VARs/Consulting Mgt.

CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. VP
13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply)

Operating Systems:
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

App. Development Products ❑ Yes ❑ No
Networking Products ❑ Yes ❑ No

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Verbatim

FROM THE OCTOBER Management Review, *IN WHICH MANAGEMENT GURU PETER F. DRUCKER DOWNPLAYS CONCERNS THAT THE POOR WILL BE SHORTCHANGED BY THE INFORMATION AGE:*

"Actually, it's probably the poor people who'll benefit most from the Information Age. I am now working with a major Latin American country — which has one of the highest illiteracy rates — [teaching them to use] satellite transmission and cheap personal computers to bring education to the remotest hamlet at around 5% of the cost of traditional schooling.

"It is the poor who are most deprived of access to the world. The rich can afford books, for instance, and so it is the poor who will most eagerly grab at new information."

FROM THE FALL 1995 NEWSLETTER OF CONSULTING FIRM RATH & STRONG, ON THE NEED TO KILL UNNECESSARY REPORTS TO RECLAIM VITAL RESOURCES:

"Don't automate low-value work — eliminate it. As much as 25% to 40% of an organization's work can be gotten rid of in only three or four months. One large company found that it was exacerbating its cash woes by dedicating nearly a quarter of its order processing capability to generating backlog reports. Another eliminated a weekly time report that exempt employees were required to maintain and submit information that had no impact on compensation or performance evaluations."

FROM A MARSHALL MCLUHAN CENTER FOR MEDIA SCIENCES NEWSLETTER:

"Networking wizards are prioritizing work on (what else?) 'priority protocols.' One of the main concerns with the Internet is that a connection request from, say, the FBI is treated with the same priority as Tommy's attempt to complete his homework assignment.

"This is democracy at work and, as usual, once democracy is identified, outside forces immediately converge to alter it."

We're drowning in E-mail

Ira Chaleff



Office workers need survival training to cope with the deluge of messages.

People everywhere are straining under the weight of junk mail they get at work and home, and before they can get a handle on that, they're also being buried by electrons organized into electronic-mail messages and groupware databases.

There's a curve to this: People get E-mail, they begin to use it, they like it, they use it more, they get overwhelmed by it. I know people afraid to take a week's vacation because of what they're going to find when they log on. You're probably one of them.

There's a parallel curve at work: We train staff on a new E-mail system for a day, and they learn to use enough features to communicate. But we don't train them further, and they don't know half of the system's features to use it *efficiently*. We don't maintain an ongoing review of how staff is using the system, and they clutter it up with junk. Information distribution and storage grows out of control.

Ever hear of entropy? It's a law, like gravity. It says that all systems move toward growing disorder and that on the way there, they get more and more complex. That includes your system now. Only vigilant maintenance actions and efforts to *simplify* things can delay the onslaught of entropy.

We're on the verge of a quantum compounding of the problem through the widespread adoption of groupware, which allows infinitely greater distribution of all information to everyone.

With the naivete of French philosopher Jean-Jacques Rousseau, who urged us to throw off all laws and return to the natural state, there is a belief that if only *all* information can be distributed *everywhere*, a new day will dawn. Well maybe, but we'll all be too tired to appreciate that dawn, having stayed up all night to read the information.

We often fail to distinguish between information that we might want to *read* and information that requires us to *act*. A distribution list that disgorges 200 messages a day totally obscures the three messages that require action. In groupware environments, the act of monitoring everyone's comments across 20 databases is more befitting the KGB than front-line workers.

We also ignore the trade-off between sharing and reviewing information on the one hand and acting profitably on that information on the other hand. Which produces value?

We're waiting for better filters and smart agents to save us, but maybe we have to save ourselves.

At the individual level, we need to train knowledge workers to sort and process large volumes of information and work. The colleague who saves 5,000 uncategorized messages, prints all his or her mail to read or is too backlogged to answer E-mail requests this week isn't contributing to a high-performance organization, virtual or otherwise.

At the group level, we must establish a process to find the balance points in our information systems between distributing critical information and performing productive work. We need to monitor the performance of human users as closely as we do network servers. Then we can design and continuously improve communication protocols that allow humans to keep up and maybe even get ahead.

But then again, the thought of being able to keep up with one's E-mail may be as hopelessly idealistic as Rousseau's.

Chaleff is president of the Institute for Business Technology, Inc., a training and consulting firm in Washington.

Objects come to the rescue

Patricia B. Seybold



Building customer loyalty is the ultimate IS challenge. Object databases will help.

The call to action has sounded in virtually every industry. To gain and sustain a competitive advantage, your business needs to build customer loyalty. Grow and nurture customer relationships. Know your customers intimately. Market to segments of one.

As Stephen A. Cone, head marketeer at Keycorp Bank, explained in a recent *Wall Street Journal* article, "It all boils down to individualized service. Ironically, in the Computer Age, we can do that. We can do what the old general store used to do."

Banks, retailers, manufacturers, consumer packaged goods companies, health maintenance organizations, pharmacies, hospitality companies and transportation firms are just some of the companies I've talked with that are focused on building customer loyalty. And all face the almost insurmountable challenge of integrating applications and databases into a comprehensive, dynamic and accurate picture of their relationship with each customer.

As information technology professionals, we have sown the seeds that brought forth this interest in harvesting customer information. We implemented point-of-sale systems. We built the databases to support telesales. We automated the field sales force. We designed and implemented customer-support operations. We installed voice-response systems. And now we're even creating electronic-mail linkages and World Wide Web pages to make it easier for customers to help themselves to information about their accounts and our products and services.

So we've created myriad ways to support customers and gather information about their habits, needs and desires. Now, executives want that customer information combined, synthesized and organized so they can use it to delight customers with products and offers to meet their individual circumstances.

How do we rise to this challenge?

First, we need to model customer behavior and attributes dynamically. That can be done with business object modeling.

Second, we need to design, refine and continuously improve all business processes that "touch" customers. That can be done by capturing, modeling and implementing the business processes using business events.

Third, we need to be able to see, at any point in time, a complete picture of each customer and our dealings with them. Object databases lend themselves nicely to capturing and organizing those complex relationships.

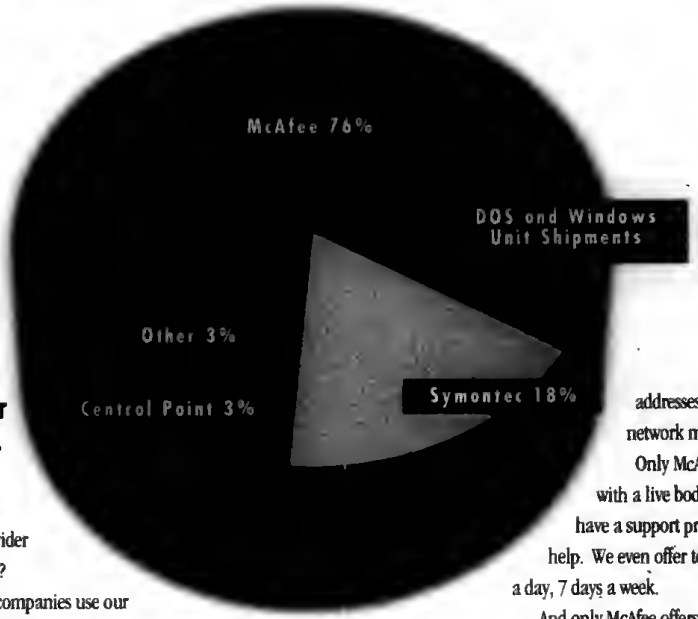
Fourth, we need to spot patterns across customers, geographic regions and demographic profiles. For that we need proactive agents operating on our behalf to look for patterns and report them.

To accomplish all of this, we'll need to *integrate* all the existing applications and databases that touch the customer, then supplement the integrated database with a lot of new information we've never attempted to capture.

A dynamic business object layer sitting on top of this infrastructure will enable us to keep the model updated as we refine our understanding of our customers and their needs. Without objects to help us, we don't have a prayer of rising to this challenge.

Seybold is president of Patricia Seybold Group in Boston. Her Internet address is psybold@psgroup.com.

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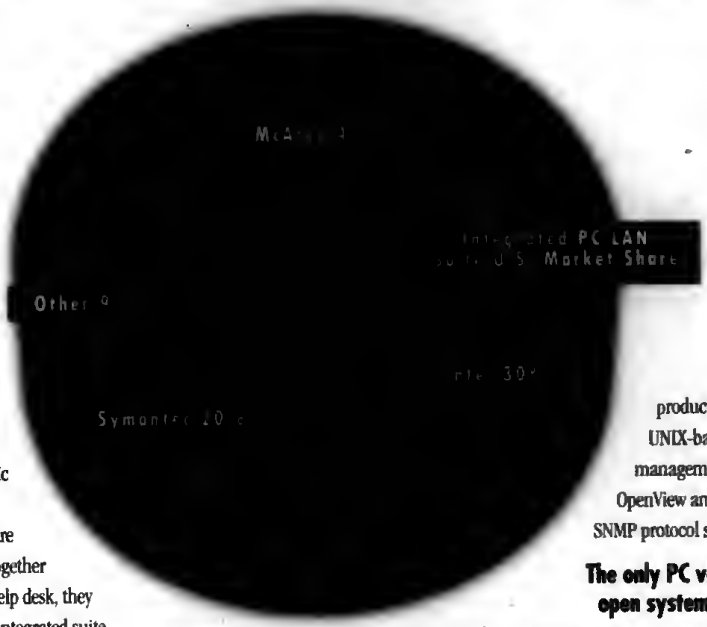
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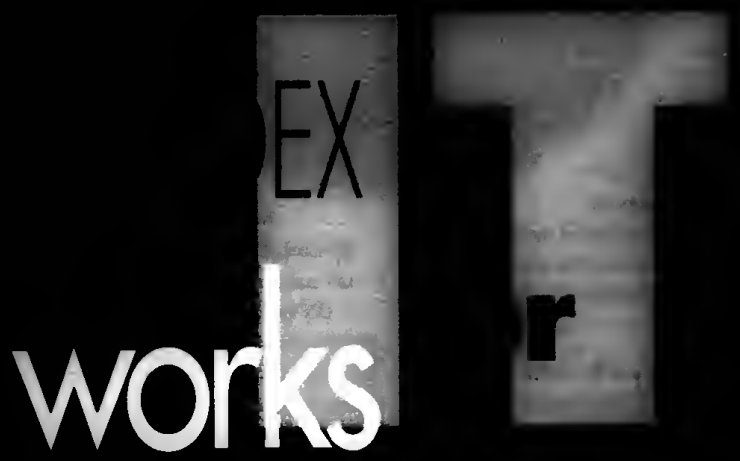
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BUILDING AN IT MANAGEMENT FLIGHT DECK

By Howard A. Rubin

THE CIO'S CHALLENGE IS TO ARTICULATE INFORMATION TECHNOLOGY GOALS IN BUSINESS TERMS, CHART A COURSE AND MEASURE PROGRESS. SUCCESS REQUIRES COORDINATION OF MEASUREMENTS.



Cover and inside illustrations by Gary Nichols

Many companies are headed toward an unfortunate future like this. The reason: In the world of information technology today, very little is being measured, managed or aligned with business objectives.

Consider these statistics from a 1995 study I conducted of more than 700 chief information officers who have expressed an interest in improving their organization's IT measurement:

- Only 1 in 3 CIOs knew where their staff was spending its time in either software development or support processes.
- Only 1 in 4 had data on the size of the company's information systems asset base.
- Only 1 in 5 knew how much this asset base changed from year to year.
- Only 1 in 7 could quantify the quality of applications systems installed in their organization.

The problems are magnified when surveying the broader population of all IT shops. Consider results from 4,000 senior IS managers that I surveyed:

- Only 1 in 5 have data on the size of their information systems asset base.
- Only 1 in 30 know how much that base was changing from year to year.
- Only 1 in 100 have quality-related data.

The effects of the lack of IT measurement is evident at all levels of the IT hierarchy, from programmers, system maintainers and project leaders, up to the CIO. At the highest level, it is represented in the form of the CEO-CIO disconnect that exists when the business value of technology investments can't be expressed quantitatively. How many CIOs do you know who can face a CEO and board of directors and justify their IT budgets in bottom-line terms? How many can state whether their organizations are doing more or less work than during the previous year, and the levels of efficiency or effectiveness?

At the lower levels of the IT hierarchy, a lack of measurement shows up as the eternal quest for a magic bullet that will improve productivity and quality once and for all. Of course, most process organizations have no clue as to their current level of performance or their potential for improvement. How many IT project leaders do you know who can make a convincing case in business terms for moving to object-oriented programming or client/server?

FLYING IN FORMATION

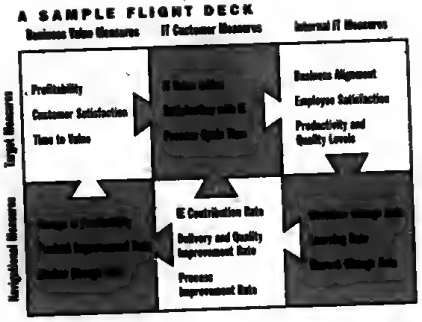
Just as a Boeing 747 was once described as 100,000 parts moving in close formation under the control of a pilot, copilot and navigator, a business enterprise is an amalgam of parts that must move in a coordinated manner toward a single destination. Each organizational player must have the means to assess his position relative to personal and organizational goals. Managers must have a set of instruments that quantify goals, rates of change and how their departments' performance links to that of other departments.

Implementing such a set of measures in an organization is, in fact, much like the process of designing and installing a flight deck on an airliner. It requires developing destination metrics used to describe where the enterprise wants to go. It also means identifying the crew, specifying their roles and giving them key measures on which to base decisions.

Communicating business objectives and deciding how to measure business value is the first step in designing a flight deck. IT managers can then create a set of specific IT customer measures and internal IT measures. IT customers include employees who receive services from the IT department. (See box opposite page.)

All three levels in the measurement matrix have a corresponding target and navigational measure. Targets

A SAMPLE FLIGHT DECK



are snapshots of a point in time in the future (for example, quarterly or fiscal-year profitability) while navigational measures are indicators of progress. Navigational measures capture rates of change or some measure of improvement (weekly percent change in profitability) that indicate progress toward the goal. (See "Dynamic Measures" on page 6.)

BUSINESS VALUE

One useful approach to quantifying business value was developed by David Norton, former president of Nolan, Norton and Co., and Robert Kaplan of the Harvard Business School. In a January-February 1992 *Harvard Business Review* article, they proposed four questions to help firms go beyond basic financial measures:

- How do we look to our shareholders (financial perspective)?
- How do we look to our customers (customer perspective)?
- What internal processes are our value drivers (internal perspective)?
- Are we able to sustain organizational learning and improvement (innovation and learning perspective)?

These four questions serve as the basis on which to develop clusters of measures. For example, the attributes of customer perspective might be quality, responsiveness and scope of service. Translated into internal variables, quality might be defined by the number of customer-observable defects; responsiveness might be delivery cycle time; scope of service might be the number of customer service representatives needed to handle a single customer inquiry. These business value metrics can then be translated into IT customer measures and internal IT measures.

One of the most exciting business-value measurement panels in use today was developed at Stockholm-based Skandia AFS by Leif Edvinsson, vice president and director of intellectual capital to measure intellectual capital and organizational learning. The company attempts to quantify the transformation of human capital (the source of innovation and growth) into structural growth using the flight deck concept.

Skandia tracks things such as the relationship between the size of the insurance broker network (human capital) and the size of the accounts that each broker manages (structural growth). The strength of the relationship is a measure of the company's intellectual capital. Determining the rate of change in intellectual capital is an indicator of organizational learning.

"It's less important to find a grand total value of intellectual capital than to develop gauges that show whether the organization is moving in the right direc-



COMMUNICATING BUSINESS OBJECTIVES IS THE FIRST STEP IN BUILDING A FLIGHT DECK

SELECTING THE CREW



The first step in building the flight deck is to select the crew. Ideally, the crew should include people who have the influence to make change happen and who are willing to take responsibility.

In the information systems department, it's everyone who is responsible for a key business or information technology function: the CIO, program managers and most middle managers. Each crew member must identify the key measures for his area of expertise. They must also be willing to share their results with others as these results will often be the raw data needed by others.

For example, the development manager at a leading process company controlled the development work flow using a factory-flow model that tracked the progress of work throughout the software development process. The data was derived from measures like the number of work requests, backlog at each software process station, cycle time and rework counts. Using data from these measurments, staff members responsible for development were able to observe and influence their progress while the manager got an estimate of the development process overall. The data was then shared with other IT managers, who used the information to help monitor their own processes.



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tion," Edvinsson says.

MEASURING IT

Measurements deeper in the organization — at the IT customer level and the internal IT department level — can be divided into six areas.

- Productivity measures such as how much input is needed to produce a certain amount of output.
- Quality measures such as defect rates, rework rates, scrap rates.
- Work flow and process measures such as time at each station in the process, value added at each step.
- Cost measures such as cost-per-unit for both labor and capital.
- Alignment measures such as percent of projects that create business value.
- Human resource measures such as turnover and productivity rates.

A defense contractor looking to significantly improve internal IT performance used these six categories to create a set of navigational and target instruments. Starting at the programmer level, the CIO tracked rework and testing efficiency. These measurements were then aggregated into product manager instruments to track cost, work flow, productivity and quality on the flight deck. Each IT project was also evaluated in terms of its contribution to business value.

Similarly, a major bank used these six metrics to link internal IT performance (system and process quality targets) with IT customer-satisfaction levels. To see how IT quality was

DYNAMIC MEASURES



At the center of any advanced measurement system are measures of change. This class of "delta" instruments focuses on the velocity and acceleration of the organization and the relationship of changes in velocity and acceleration to other measures.

Consider the world of computer hardware, where everyone talks about the rate of new hardware introduction. But more important than the introduction rate itself is how the rate is accelerating. Few CIOs have considered acceleration in the context of software development.

For example, a company performing a benchmark assessment of its application support function in 1991 would find that it was right on the average at that point in time if it was able to support about 300 function points (FP) or 40,000 lines of third-generation code per developer. Suppose the CIO of that organization demanded that his department increase the support efficiency by 25% a year: 375 FP in 1992, 469 FP in 1993, 586 FP in 1994 and 731 in 1995.

While his demand seems aggressive, the average support rate in 1995 obtained in the Worldwide Benchmark Project is 1100 FP. Quite simply, 25% a year is not fast enough to keep up as the rate of global performance improvement increases or as performance accelerates.

If the company had entered into an outsourcing agreement with a predetermined yearly improvement rate of 25%, four years later the organization would have moved from being an average performer to the bottom quartile, and the CIO would be long gone.

The importance of dynamics is even clearer when put into focus by some figures on the distribution of IT performance. For example, in a 1991 study, I found the difference in systems development efficiency between a top-performing company and a bottom-level performer was about 4:1. That is, the top performers developed systems four times cheaper (more quickly) than the bottom performers.



BY TRACKING DYNAMIC MEASURES, YOU CAN TELL IF YOU ARE ACCELERATING OR DECELERATING TOWARD A GOAL.

By 1992, the ratio had increased to 20:1, and today it is up to about 600:1. In simple terms, the performance-rich are getting richer. The few high flyers are performing at a level where the cost structure and responsiveness of the IT function can put a low flyer out of business.

Robert Kaplan of Harvard University suggests that managers focus on the performance half-life. This means that a manager should report not only on where a project is in relation to its goals, but should also report on the time projected to close 50% of the gap between where it is and the goal.

For example, suppose your firm has spent six months on a performance improvement project targeted at a 25% reduction in average project cycle time. On a monthly basis (at least) the observed reduction needs to be reported along with the projected amount of time to get 50% closer to the target. This is like driving a car to a destination and reporting at any point in time how many miles are left and how much time it will take to cover 50% of the remaining miles. The former lets you know if you are getting closer, the latter if you are slowing down. Most IT projects resemble driving from the suburbs to a major city; the closer you get, the slower you go.

improving, bank personnel measured things such as system development rework and error detection during testing in relation to errors on billing statements (the IT customer measure). They set targets and tracked progress against these measures.



MEASUREMENT SHOULD BE USED AS A "PULL" STRATEGY, NOT A "PUSH" STRATEGY.

The bank applied the same six categories to help gauge the success of a merger. The goal was to hold the business steady (revenue and asset management) while it rapidly revamped the internal IT performance objectives.

During the merger, the IT departments had to monitor the conversion of data and systems between the banks while continuing to support external customers. While IT was measuring the bits and bytes of the conversion, the top-level business value measures focused on the number of customers and accounts converted. Keeping the IT measures on track were essential for maintaining business, and senior management kept a close eye on alignment of these two levels.

THE NEXT FRONTIER

Because the concepts are so new, a handful of companies are in the vanguard of flight deck development.

Over the last two years, a major Northeast telecommunications company has built a virtual flight deck as it set the stage for a major re-engineering effort. Faced with the problem of redesigning the company to be significantly leaner, while at the same time expanding into new markets, management identified the key indicators that it needed to monitor in order to make the transition. The flight deck was first applied in a computer simulation with a number of different scenarios. Managers used the model to earn their "instrument ratings" and gain insight into what they would face in the future.

The company is now transitioning from the simulator to a real flight deck that will monitor future performance.

Likewise, an insurance company developed instruments to ensure that it gets the desired benefits from its major outsourcing agreements. The "flight crew" contains personnel from the company and the outsourcer; the specific measures are spelled out in the contract. In addition to standard items such as service levels and response times, the contract focuses on the rate of change for productivity and quality.

For the insurance company, the flight deck means lower costs and better quality of the final product. For the outsourcer, it translates into higher profits and performance bonuses if it meets the goals. Such improvement agreements take a variety of forms: measures with a fixed improvement rate (e.g., 25% per year), or measures that focus on maintaining a level of relative performance through indexing (e.g., performance in the top quartile).

There are a few lessons to learn from early innovators. First, measurement should be used as a pull, not a push, strategy. The pull strategy demands that management define where the enterprise is going in terms of measurable aspects of the business itself. The push strategy, on the other hand, is when measurement is mandated and everyone is pushed into it without explanation why.

Second, it is critical that an organization does not focus on measurement indices at the expense of managing the organization. Measurement is a vehicle for communication and coordination. It is not an end unto itself.

Third, flight deck information must be used as a common currency of communication throughout the organization and not viewed as overhead. Therefore, information collection must be unobtrusive and highly automated. For each measurement, a data source, acquisition mechanism and refresh rate must be determined.

There's no shortage of tools and data sources to fill these needs. What is needed is the will.

OTHER READING

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◇ "Putting the Balanced Scorecard to Work," by Robert S. Kaplan and David P. Norton, *Harvard Business Review*, September-October 1993.

◇ "Managing By Wire," by Stephan H. Haeckel and Richard Nolan, *Harvard Business Review*, September-October 1993. ♦

ABOUT THE AUTHOR



Howard A. Rubin is chairman of the Department of Computer Science at Hunter College of the City University of New York and a faculty affiliate of both Gemini Consulting and Cap Gemini America. In support of his work, he has assembled one of the largest IT productivity, quality and performance benchmark databases in existence. Rubin can be reached on the Internet at 71031.377@compuserve.com.

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By Jaikumar Vijayan

A start-up has beaten many nf the established PC players to the punch with a family of highly modular, processor-independent boxes.

The Panda Project, Inc. in Boca Raton, Fla., recently announced that it has begun shipping its universal server and workstation platfnrms. The company claims these systems can work with virtually any standard PC processor, operating system and hardware subsystem. The systems were announced at the PC Expo show in June.

Based on a patented technology the company calls Compass Connector, Panda's multicolored, ronnded Archistrat servers and workstations allow users to change processors, memory, I/O and storage subsystems simply by swapping them on a passive backplane on the system.

For instance, users can switch between Intel Corp. Pentium processors and Digital Equipment Corp. Alpha chips by changing processor cards.

The game plan

The idea behind building such Lego-style systems is to provide a hedge against "instant hardware obsolescence," said Stanfnrd Crane, chief executive officer of Panda. The plan is to simplify hardware upgrades, free users from being tied to one platform or vendor and extend the life of a system, he added.

These factors led the Bay District School System in Bay County, Fla., to purchase an Archistrat system on a trial basis.

"The best thing about it is its flexibility. School systems don't generally have large amounts of money to spend on technology," so a system that allows easy upgrades to the latest technologies is welcome, said Richard Streunse, MIS director of the school system.

The Panda systems are all Intel-based platforms, although support for other processors such as the Alpha chip will become available in the first half of next year, Panda said.

Panda isn't the only company toying with such flexible designs. Digital's Celebris line nf PCs, for example, gives users the same capability. Desktop market leader Compaq Computer Corp. is also working on a similar processor-independent design.

"Panda has done some clever things with packaging their technology. What they are trying to do right now is to get it accepted in the market," said Amy Wohl, editor of "TrendsLetter" in Narberth, Pa.

That may not be a particularly easy thing to do in the end-user market, however, Wohl said. "Corporate users tend to buy bundled, highly integrated systems from brand-name manufacturers," and Panda's Lego-style approach may not fit in this market, Wohl said.

The company's starting price tag of nearly $10,500 for a server with 32M bytes of RAM and a tG-byte hard disk is also steeper than that of most comparable products.

So Panda — which consists mainly of former IBM staffers — may have more success selling its technology on an OEM basis to systems vendors.

The inherent ability of the technology to run a variety of processors could make it appealing to some manufacturers trying to position themselves in different and emerging market segments, according to analysts.



The Panda Project: Archistrat 4s server

Special features: Modular, processor-independent design
Processor: Pentium-based, but support for Alpha and PowerPC chips is planned
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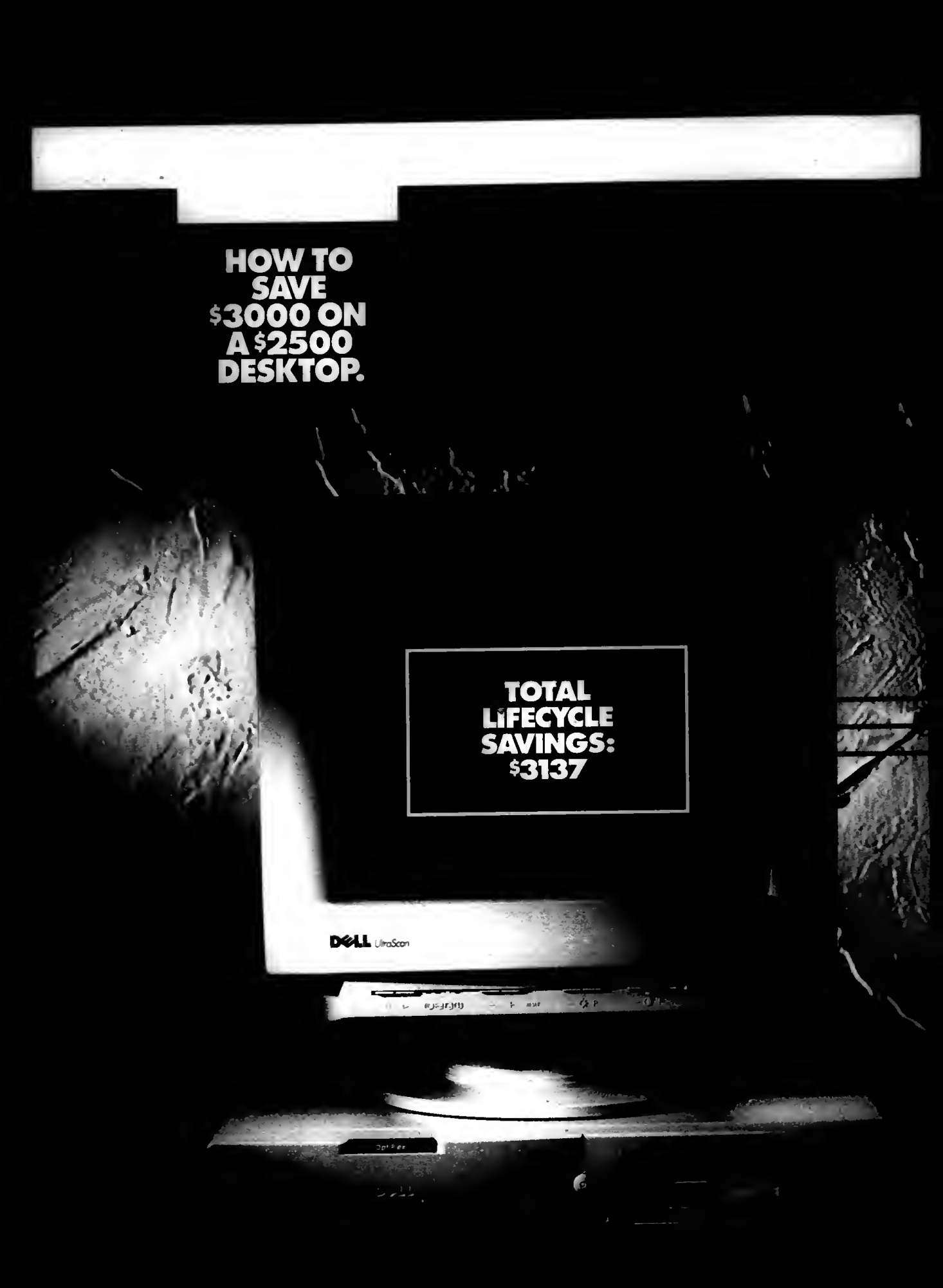
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Video Be-in

Start-up unwraps PowerPC system for digital and audio users

By Lisa Picarille

Jean-Louis Gassee, who in 1990 left his post as Apple Computer, Inc.'s chief technologist and later formed Be, Inc., unveiled a PowerPC hardware system two weeks ago that bucks convential wisdom by running a new, proprietary operating system.

The system, called the BeBox, targets digital audio and digital video users.

"To try to sell into the office — that would be suicidal," Gassee said.

The 22-employee Menlo Park, Calif., start-up spent just $9 million in private and venture capital funds to develop the BeBox, which was unveiled at last week's Agenda conference in Scottsdale, Ariz.

The system is expected to be priced between $1,600 and $3,200 for a bare-bones configuration without a hard drive or memory. Video and audio editing systems typically cost between $25,000 and $100,000, which includes the cost for gigabytes of storage, additional RAM, video boards, specialized monitors and pricey software.

Slated to ship to software developers later this month and be available in stores by next year, the product runs on two 66-MHz PowerPC 603 chips, supports up to 256M bytes of RAM and sports three infrared ports, four sound ports, four Musical Instrument Digital Interface ports and an extra port, called the Geek port, that controls external analog devices. Gassee said a four-way 620 PowerPC BeBox is due next fall.



Be's Jean-Louis Gassee *says selling regular office systems would be 'suicidal'*

The BeOS, which is written in C++ and C code, is an object-oriented, multithreaded operating system based on microkernel technology.

The graphical windowing BeOS also includes a built-in database engine, a browser and several customizable applets, including a text editor and CD-ROM player application.

Gassee said the system complies with the Common Hardware Reference Platform that IBM and Apple are codeveloping.

Apple plans to port a version of the Mac OS to the BeBox.

Some digital video and digital audio users said they welcome a new alternative.

Christopher Candela, operations manager at Impressions, a marketing and sales promotion agency in Rosyln Heights, N.Y., said his company is already committed to the PowerPC chip. He said he would consider using the BeBox if the software applications his company needed were available.

One user said he was intrigued by the BeBox but skeptical about its proprietary operating system.

"I wouldn't run right out and buy one because I'm scared about it running its own specialized operating system," said Norman Dlugatch, a scoring engineer at the postproduction sound facilities of Paramount Pictures in Hollywood. "Will there be any applications, and will this company be around when I need service and support?"

"Video people are generally less hesitant to go with an alternative platform," said Bob Turner, an independent consultant in Scituate, Mass.

However, Turner said, Microsoft Corp.'s Windows NT's multiprocessing capabilities have helped it become the preferred operating system for video systems.

On the flip side of the argument is Chris Le Tocq, president of SoftTracks Software Research, a market research firm in Los Altos, Calif. "People don't want an alternative operating system," he said. "Being in the boutique OS business is crazy right now."



Reeling and rolling

For the past decade, the major forces in video editing systems have been from Apple and Silicon Graphics, Inc., along with proprietary systems from companies such as Avid Technologies. But at the National Association of Broadcasters conference in Las Vegas in April, 45 of the 52 editing systems announced were Windows-based, according to Bob Turner, a consultant in Scituate, Mass.

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**CIO Magazine* 1994 Readers' Choice Awards.

Briefs

Win 95 image viewer

Wang Laboratories, Inc. previewed ImageVue, its image viewer for Windows 95, at the recent Engineering Document Management Systems/Product Data Management Vision '95 show in Chicago. The viewer lets users scan, fax and view raster-based image files. Officials said the final version will be available on-line to download free by year's end.

Firm adds NetWare

Compaq Computer Corp. last week announced that it will integrate Novell, Inc.'s NetWare 4.1 SMP operating system on its SmartStart installation tool. The integration is aimed at easing installation and configuration hassles for Compaq users. NetWare 4.1 SMP via SmartStart will be delivered in the first quarter of 1996.

Merrill Lynch embraces NT for branch office automation project

Company joins financial shops jumping on NT bandwagon

By Mitch Wagner

Merrill Lynch & Co. has begun a project that will eventually result in the deployment of 25,000 seats of Microsoft Corp.'s Windows NT workstations to brokers, support personnel and managers in 630 locations nationwide.

"We're replacing the entire infrastructure for our branch office system," said Ritch Gaiti, first vice president of advanced office systems and technology at Merrill Lynch.

The Windows NT workstations, connected to NT servers, will run applications that give brokers access to client information, market data, financial planning research, news and other investment information, he said.

The beta program was launched with about a dozen seats in an office in Lawrenceville, N.J., two weeks ago, Gaiti said. After about a year of testing, Merrill Lynch will roll out the project nationwide late next year.

The NT workstations are part of an ambitious commitment to new technology by Merrill Lynch.

In July, Merrill Lynch disclosed details of its Trusted Global Advisor program, including a deal for new Sybase, Inc. database servers estimated at more than $10 million in value, according to sources close to the project. The NT workstations will serve as front ends to those databases, Gaiti said.

As part of the next phase of its deployment, Merrill Lynch is evaluating networking packages. The company is committed to the TCP/IP protocol and is considering deploying Novell, Inc.'s NetWare or another network operating system on top of that. The company is also looking into systems management packages. Decisions on networking technology will be made by year's end, Gaiti said.

Merrill Lynch is one of a growing number of financial shops nationwide choosing NT workstations as their desktop of choice, passing over alternatives such as Microsoft's Windows 3.1 and Windows 95, IBM's OS/2 and Unix.

As with Merrill Lynch, other financial institutions' MIS heads have cited NT's stability and compatibility with other platforms as the reasons for choosing the operating system.

However, customers haven't been flocking to NT on the server — so in that respect, Merrill Lynch is unusual.

"People are migrating to NT first on the client," said Michon Schenck, an analyst at The Tower Group, a Wellesley, Mass., consultancy specializing in financial services. "It's still not proven to be a high-volume network operating system for large numbers of concurrent users."

Big buys

Late last month, Merrill Lynch said it will buy $8 million worth of object-oriented software and services from Next Computer, Inc.

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OS/2 Warp Entertainment Toolkit	Offers video, audio, joystick and networking enhancements for OS/2 developers who want to create entertainment titles.	Beta distributed to participants of the Developer Assistance Program
IBM DCE 2.1 for OS/2 Warp	Gives PC LAN users client/server computing based on OSF/DCE. Lets OS/2 developers create plug-and-play applications that exploit distributed services.	Available early 1996
IBM Windows 95 Client	Gives users a Windows 95 client that works with OS/2 Warp Server.	Available early 1996
AttachPak for OS/2 Warp Connect	Enables OS/2 developers to add APPN, remote and TCP/IP support for dial-up and LAN access to the Internet and Lotus Notes Express on-line service.	Available now

Cyrix unveils Pentium-rival chips

By Jaikumar Vijayan

The first clone chips with enough power to rival Intel Corp.'s Pentium processors in mainstream commercial applications have finally arrived.

After months of speculation and delay, Cyrix Corp. last week lifted the curtain on its much-touted, next-generation MI chip — now formally known as the 6x86 processor. The Richardson, Texas, chip maker plans to ship the processor in volume by the first quarter of 1996.

For users, the arrival of the 100-MHz 6x86 processor is unlikely to have any immediate impact on processor or system prices. However, relatively low-cost systems rivaling the performance of Pentium-based models and, in some cases, even Pentium Pro-based models should become available by the second quarter of next year.

AST Research, Inc. and Epson, Inc. are among companies that have committed to using Cyrix's chip in their systems.

Originally positioned as a Pentium rival, the 6x86 is now being targeted by Cyrix as a Pentium Pro rival.

Intel's Pentium Pro is heavily optimized for 32-bit applications and environments, so much so that the chip, in some cases, has proved to be even slower than current Pentium systems when running most 16-bit commercial applications under DOS and Microsoft Corp.'s Windows 3.1 and Windows 95. In comparison, Cyrix claims to have benchmarked the 6x86 running faster than Intel's fastest 133-MHz Pentium chip.

"On paper, at least, it looks like the Cyrix chip may have better performance than the Pentium at given speeds. [But] a lot of its success is going to depend on how much they can produce and how system vendors are going to position the chip relative to the Pentium Pro," said Tony Massimini, an analyst at Semico Research Corp. in Phoenix.

The chip, which is manufactured for Cyrix by IBM Microelectronics, boasts some of the same advanced technology that Intel has been touting in its Pentium Pro. These include a superscalar architecture and other features that overcome some current architectural bottlenecks and significantly boost processor performance.

Pricing for Cyrix's 6x86 chip is $450 in quantities of 1,000.

About the chip

Cyrix's 100-MHz 6x86 chip is being manufactured on a 6-micron process at IBM and has a larger-than-usual die size of about 394 sq. mm. A smaller, faster 120-MHz version is in the works and should be released by year's end.

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Briefs

Technology winners

Three IBM scientists and Edward R. McCracken, chairman and chief executive officer of Silicon Graphics, Inc., are among the winners of the National Medal of Technology, to be presented Oct. 18 at the White House. McCracken won for groundbreaking work in 3-D visual computing. IBM scientists Praveen Chandhari, Jerome Cuomo and Richard Gambino won for their discovery of magnetic materials that made possible today's $2 billion rewritable optical-disc data storage industry.

HP, Nokia team up

Hewlett-Packard Co. and Nokia Mobile Phones will co-develop devices to combine voice, data and fax. The firms will also collaborate on modems for high-speed, on-line data access.

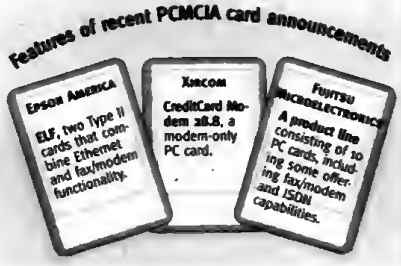
Firms roll out two-for-one PC cards

By Mindy Blodgett

The two-for-one PC card is a growing trend if recent announcements are any indicator.

PC cards are credit-card-size devices used to give portable computers add-in networking, fax/modem and paging capabilities. These "combo" cards perform more than one function for users.

"Having one PC card perform more than one function is logical," said Mike McGuire, an analyst at Dataquest, Inc. in San Jose, Calif. "More and more, the notebook is serving as the user's single computing unit, and the fewer cards you have to carry around, the better."



All-inclusive

McGuire said these cards typically combine networking and modem capabilities — the two most popular uses for PC cards. One example comes from Epson America, Inc. in Torrance, Calif., which recently released a PC card that combines Ethernet and fax/modem capabilities.

Epson's ELF, or Epson LAN Fax, comes in two models: one that offers a data transfer rate of 14.4K bit/sec. and the ELF 28NA, which offers a rate of 28.8K bit/sec. for the fax/modem functions. The cards will be available next month and are priced between $299 and $449.

Another company, Fujitsu Microelectronics, Inc. in Redwood City, Calif., recently rolled out its first combination card as part of a group of interoperable PC cards for the mobile market. The new line is considered interoperable because the cards are all compatible and standardized for ease of use together.

The family provides connectivity in communications such as fax and electronic mail; multimedia, including sound; and LAN access for data transfer.

Fujitsu's first combination card, the 10Base-T LAN and SCSI card, lets mobile users simultaneously connect to the network while running a SCSI peripheral such as applications from a CD-ROM player. This card costs $349.

Type II pricing

The 10 PCMCIA Type II cards range in price from $169 for a LAN adapter card to $600 for an Integrated Services Digital Network (ISDN) adapter card. All of the cards are available now with the exception of the ISDN card, which will ship next month.

Xircom, Inc. in Thousand Oaks, Calif., which already offers Ethernet/modem PC cards, recently bucked the trend by adding a modem-only card to its product line. The CreditCard Modem 28.8 offers high-speed remote access to LANs, the Internet and other on-line options.

The company is offering a $50 rebate on the $325 product until the end of the month.

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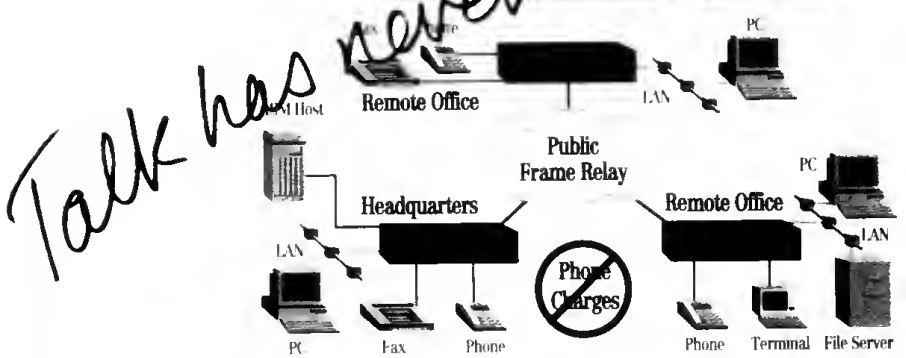


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P. I. Engineering, Inc. has introduced WhyMouse

According to the Williamston, Mich., company, WhyMouse lets users connect two or more pointing devices to a single serial mouse port. It is an external hardware device that doesn't require software or modify the host computer. It contains a minicomputer that monitors WhyMouse input ports and automatically selects the first active device, blocking the signal from the other device until the first one stops transmitting.



P. I. Engineering's *WhyMouse*

WhyMouse was designed to let users operate both a mouse and trackball on the same PC. Other uses include sales demonstrations, presentations or discussion groups with several pointers. It also accommodates left- and right-handed users of a single machine and combines special pointing devices and mice.

WhyMouse costs $40.

▶ *P.I. Engineering*
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MicroTouch Systems, Inc. has unveiled the TruePoint Value Line of touch monitors.

According to the Methuen, Mass., firm, the TruePoint Value Line is a family of 14-, 15-, 17- and 20-in. touch monitors designed for PC and Macintosh applications. They integrate high-resolution displays with MicroTouch ClearTek capacitive or VersaTouch resistive touch sensors.



MicroTouch's *TruePoint Value Line monitor*

Pricing starts at $995 for the 14-in. VersaTouch screen and at $1,095 for the ClearTek screen.

▶ *MicroTouch Systems*
(508) 659-9000

Sonnetech Ltd. has unveiled a version of its Colorific color management software for Microsoft Corp.'s Windows 95.

Windows 95 has a color-matching module that needs to know the color characteristics of each individual monitor's display. According to San Francisco-based Sonnetech, Colorific uses a color-tuning sequence to supply this information and recreates the color settings each time the unit is turned on. It creates a color profile and a data profile describing the individual monitor's specific color rendering behavior and supplies it to the operating system. The operating system uses this information to match the colors printed to those on-screen.

Colorific is included with many new monitors. Users of previous versions of Colorific can upgrade to the Windows 95 version for $15.

▶ *Sonnetech*
(415) 957-9940

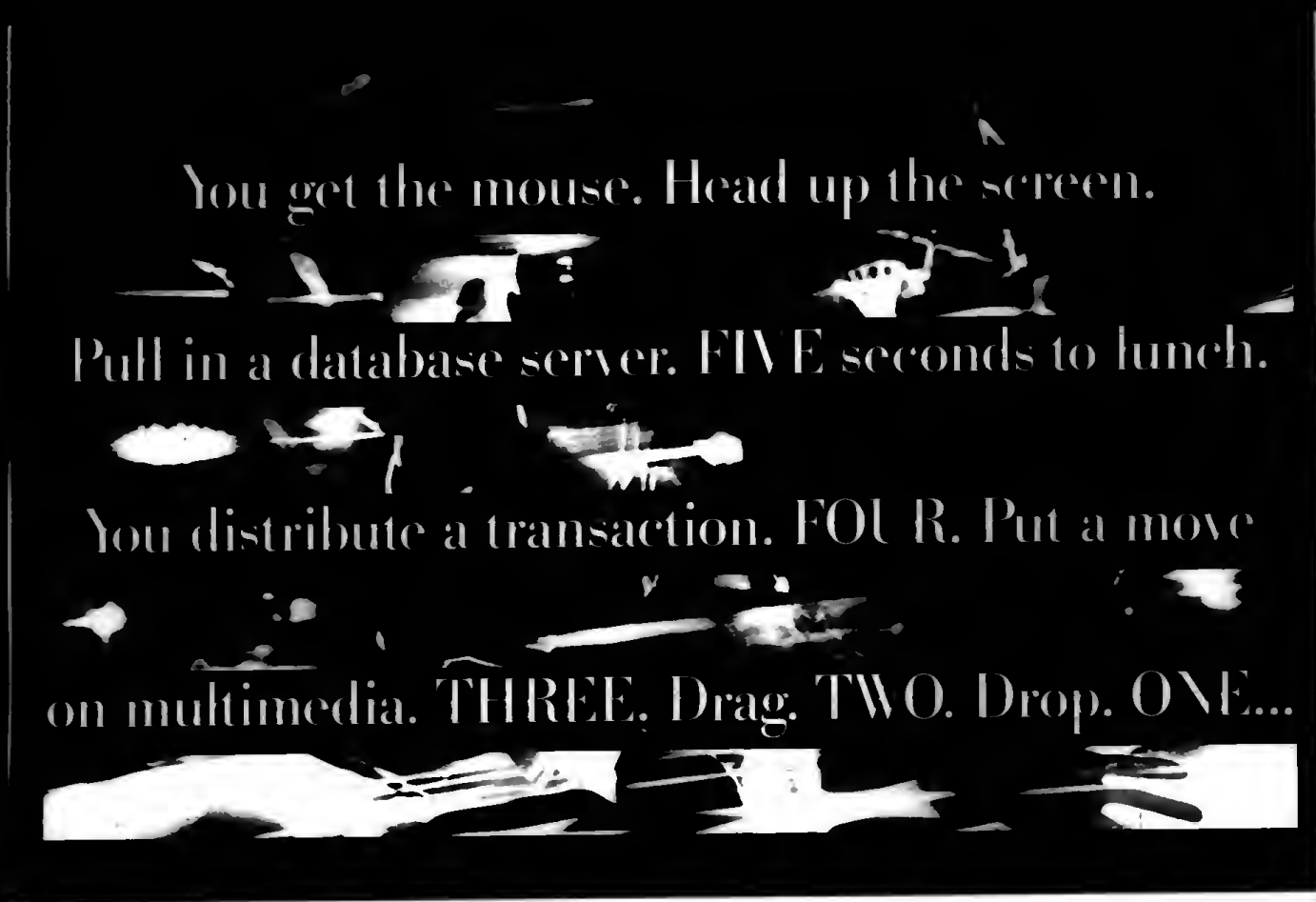
PowerSolutions for Business has introduced PlanMaker 2.0 for Windows, business plan software.

According to the St. Louis company, PlanMaker 2.0 lets users create dynamic business plans for businesses of all sizes. It guides users through a step-by-step process of creating a business plan using on-screen prompts, tutorials and a workbook/manual. It is compatible with Microsoft Corp.'s Windows 95.

PlanMaker 2.0 for Windows costs $129.

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NEW PRODUCTS, 60
MERLIN SOFTWARE WORKS LIKE MAGIC, 65

Workgroup Computing
LANs • SERVERS • SOFTWARE FOR GROUPS

Putting the pieces together

Defragmentation software one way to restore systems performance

By Steve Moore

Like highway drivers who waste gas by constantly speeding up and slowing down instead of cruising at a steady throttle, computer users often unwittingly cause their systems to perform poorly.

For example, users who constantly add and delete files on non-Unix computers are likely to slow their systems' performance by 5% and, in some cases, by significantly more, analysts said. That happens when a lack of file-size chunks of free disk space cause files to be broken into fragments, which the system must work hard to track (see box).

Some vendors offer software to restore systems performance by defragmenting disks. However, such software must be used regularly and often precludes or limits use of the system while the software is running.

"Ideally, you would have some way to run a system agent program in the background and defragment your disk every night after your backup runs," said Howard Marks, chief scientist at Tiger Team, a consulting group in South Norwalk, Conn. Speeding a couple of hundred dollars on server software that provides a 5% performance increase isn't a big deal for many users, he said.

Fragmentation can occur under Unix and other client/server operating systems. "Under [Microsoft Corp.'s] Windows NT — as opposed to NT Advanced Server — fragmentation is an issue, as it was under DOS," Marks added.

Different needs

Users said the value of utility software for defragmenting files depends on the computing environment in which it will be used.

"If I was given the job of systems administrator in a stable network environment and had a budget, I would strongly consider purchasing a [defragmentation] utility just to avoid ever having to think about or deal with that," said Adam Lynn, a senior LAN engineer at Micro Research Industries in Alexandria, Va.

Most of Micro Research Industries' servers run Windows NT, Lynn said, and the company has evaluated the NT version of the Diskeeper defragmentation software from Executive Software International, Inc. in Glendale, Calif.

But while Diskeeper is "a valuable product, they want $500 for a product that has a single use," Lynn said.

Users and analysts said disk defragmentation software is just one way to optimize client/server performance.

"Putting more memory on the server would probably have a bigger [positive] effect on performance than defragmenting" the server's disk, Marks said.



Don't fragment those files

As users add and delete files on computers, a lack of file-size chunks of free disk space can cause files to be broken into fragments scattered across a disk. Systems performance suffers because additional work is required to store, track and retrieve these fragmented files.

Another alternative to using a defragmentation utility is to back up all the data and reinstall it on the system, users said. That puts data back on the hard disk in a tight sequential pattern. This approach works well in a "fluid environment" in which servers are often restarted or rebuilt, Lynn said.

Additional costs

While most users should defragment their disks regularly, most people don't, said Patrick Corrigan, president of the Corrigan Group, a Tigard, Ore.-based consultancy. If they do, the defragmentation process, even as a background task, "will add overhead in terms of system resource usage," he said.

With the Unix operating system, "you don't need a defragmentation utility unless you have a large file system with a lot of little files that are created and deleted frequently," said Simon Weatherill, a senior network engineer at Burlington Coat Factory Warehouse Corp. in Lebanon, N.H.

The Unix operating system "will try to find the biggest free space" for files and automatically "reserves 10% of the disk to cope with fragmentation," he explained.

Automation giant finds window of opportunity

By Stuart J. Johnston

One of the big guns in the manufacturing automation world has begun delivering its shop floor control products on a Windows platform.

GE Fanuc Automation NA in Charlottesville, Va., is shipping a client/server version of its computer-integrated manufacturing (CIM) tool for monitoring and control based on Microsoft Corp.'s Windows NT. It will soon service clients running on Microsoft's Windows 95 as well.

The Windows NT product, called Manufacturing Enterprise Systems/Supervisory Control and Data Acquisition (MES/SCADA), is the first of GE Fanuc's CIMplicity line to ship on NT, said Bob Collins, president and chief executive officer of GE Fanuc.

The package consists of a Windows NT Server-based application that provides data collection, data processing and storage for manufacturing information. An NT-based client application provides users with a common graphical user interface, or Man Machine Interface (MMI).

"GE Fanuc did a great job of making their applications look just like Microsoft's applications, so an engineer that's never been trained can sit down and begin using it," said Bruce Bemisderfer, manager of software development and strategic planning for manufacturing floor systems at General Motors Corp.'s Saturn automobile plant in Spring Hill, Tenn.

CIMplicity monitoring and control products for Windows NT and Windows 95

- **MES/SCADA** – Enterprisewide supervisory monitoring software
- **MMI** – Provides local data collection and monitoring; integrates with MES/SCADA
- **Control** – Tools for programming, configuring, diagnosing problems and developing software for PLCs and other controllers

The new CIMplicity products also support Microsoft's OLE and Open Database Connectivity, both standard Windows communications protocols. This support enables data collected from a shop floor to be easily stored and retrieved in a Microsoft SQL Server database running on NT Server. Workers can then access that data via desktop productivity applications such as Microsoft's Excel and Access.

Reduced training costs

Saturn already had a large installed base of CIMplicity software running on Digital Equipment Corp. minicomputers. Bemisderfer's group wanted CIMplicity on a Windows platform to reduce training costs because a large number of engineers run Windows on their PCs. "It looks like it's going to pay off," Bemisderfer said.

The Saturn plant is using GE Fanuc's NT-based products to run all of the body shop and about half of the paint shop, Bemisderfer said.

Another motivation for going to NT-based control systems is to dramatically lower costs of hardware. Saturn can use Digital's Alpha 2100 series computers instead of more expensive minicomputers.

Still, Saturn needed systems that were robust enough to handle the constant strain of running the plant 20 hours a day without fail. Every minute the plant is down costs $4,000, according to Bemisderfer.

So far, so good

So far, everything is working, and the plant plans to expand its use of NT-based control and monitoring software. Saturn also plans to implement Microsoft's Windows 95 and Office 95 on 3,000 user desktops by Christmas.

GE Fanuc is readying its first Windows 95-based CIMplicity products for a December release, including MMI on Windows 95.

In addition, CIMplicity Control for the Series 90-70 Programmable Logic Controllers (PLC) will ship for NT and Windows 95 in December, GE Fanuc officials said.

The Control product enables engineers to program PLCs to perform shop floor functions.

Norman Data Defense Systems, Inc. has introduced Norman Virus Control for Microsoft Corp.'s Windows NT.

According to the Fairfax, Va., company, the product is a 32-bit application that communicates directly with the NT operating system and can detect more than 7,100 computer viruses. It features archival file scanning, a floating button bar, last log-file display, a configurable scheduler and a virus library.

Norman Virus Control for Windows NT provides built-in flexibility that allows the system to be tailored to specific user requirements. Configurable routines include programmable automatic scanning of different systems and decreased screen output during scanning, and the product can launch a customized scan from an icon on the desktop. It also lets users specify up to 20 file extensions to be scanned in addition to the default file extensions and shortcut scanning for floppy disks.

Norman Virus Control for Windows NT costs $129. Volume discounts are available.

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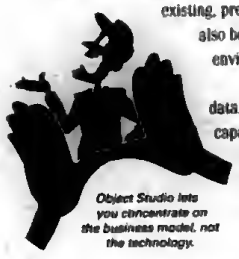
The problem comes in using them to create large-scale, mission-critical client/server solutions. They simply can't do it. In fairness, they were never meant to.



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Time Line Solutions Corp. has introduced Project Updater, a Microsoft Corp. Windows 95-compliant workgroup application.

The Novato, Calif., company said Project Updater automates status reporting and project updating for teams throughout an organization, distributes assignments to users and tracks the progress of a project in real time.

Project Updater uses a centralized Oracle Corp.-based repository of project information using Microsoft Project 4 or any version of Time Line Solutions' Time Line for Windows. It features an enterprisewide repository, a standard interface, updated histories, resynchronization and electronic mail in each application.

Pricing for Project Updater starts at $9,995.

▶ *Time Line Solutions*
(415) 898-1919

Waterfield Technology Group, Inc. has introduced WinQuote 2.0, a pricing, quotation and forecast application for client/server environments.

According to the Lexington, Mass., company, WinQuote 2.0 gives users corporate pricing data, prints price lists, creates quotations, generates proposals and submits orders to centralized corporate order processing systems. Each of these tasks can be activated from desktop systems or remotely from a laptop.

WinQuote 2.0 gives users distributed database capabilities for central data maintenance and local PC-level database capabilities. This combination lets users retrieve customer files, browse price lists, add models to quotes, develop and change discount levels, price service fees and print individual departmental forms.

The product requires Microsoft Corp.'s Windows 3.1 or later, Microsoft Word 2.0 or later, Lotus Development Corp.'s CC:Mail/CC:Mobile 2.0 or later, or Notes.

Pricing for WinQuote 2.0 starts at $495 per copy.

▶ *Waterfield Technology Group*
(617) 863-8400

Scantron Corp. has introduced Filefio 4.0. The Tustin, Calif., company said Filefio 4.0 is a high-performance document imaging and management application that lets users easily find files with a single mouse click.

The product supports more than 130 scanners with both video and SCSI interfaces, and it features complete file security.

Filefio 4.0 contains a feature that allows forms processing packages to index documents automatically for Filefio. Forms processing software can translate information and send it to Filefio and save users from manually keying in the document information. Filefio 4.0 can store more than 650M bytes of information on a single CD-ROM.

Pricing for Filefio 4.0 starts at $795.

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An added incentive

HP bolsters middleware to attract distributed users

By Jean S. Bozman

Hewlett-Packard Co. is still trying to persuade more users to swim in the choppy waters of distributed computing — this time via additional consulting services for some of its most complex software.

In January, HP launched a program to make it easier for users to buy and install software modules that enable distributed computing. These modules are also known as middleware.

Many customers, however, were not willing to take the plunge into developing complex middleware.

So now HP has bolstered its original Middleware Engineering Initiative (MEI) with more consulting services and new releases of its biggest middleware products for HP 9000 Unix servers — CICS/9000, Encina/9000 and Distributed Computing Environment (DCE/9000). DCE is Open Software Foundation networking software that allows users to write distributed computing applications for mixed-vendor networks.

Building companywide distributed applications is a process that can take two to three years or more, and integrating middleware modules is one way HP hopes to help users speed that process. Custom-built distributed applications allow end users to access secure corporate data on servers and mainframes across an enterprise.

But some analysts said HP is repackaging existing services and sidestepping the fact that most users would rather use ready-made middleware than build it.

Some early DCE users said last week that many DCE software modules will eventually have to be hidden in off-the-shelf applications to be widely used by mainstream users. "It'll be an invisible part of the infrastructure, which is what it was supposed to be all along," said Ted Hanss, an information technology manager at the University of Michigan in Ann Arbor. The university is an early and extensive DCE user.

"Customers are in the position of parents who are building a Heathkit electronics set on Christmas Eve. You can only put together so much stuff in the allotted time."

— Nina Lytton, president, Open Systems Advisors

Users who started early with DCE and related software products said they did so with their own resources, which usually included large in-house programming staffs.

"We've done almost all the DCE [and] Encina stuff internally," said Ron Beaton, an information technology manager at Ohio State University in Columbus. "We received a lot of help from HP in getting beta [copies] of new versions of software." But the site relied on sixteen in-house programmers for two years of coding C++ clients and C servers to make a DCE-based traffic-ticketing application for HP 9000 Unix systems.

At the Lexis-Nexis on-line data service in Dayton, Ohio, a group of 40 in-house programmers built a DCE-based on-line application that will go into production later this month. They worked on the project, using an object-based HP tool kit called OO-DCE, for about three years.

The idea of prepackaging distributed computing software into tool kits and console products appeals to some HP software users — even those who have forged their own paths with middleware. Ahmad Asadi, a manufacturing applications group manager at AlliedSignal, Inc.'s Aerospace division in Torrance, Calif., likened the process to building a house — and doing your own plumbing and wiring as well.

Until application packages have more built-in middleware, users said they will continue to face a complex programming task to get distributed functionality.

Merlin software works like magic to tighten Unix security

By Gary H. Anthes

A software magician has appeared on the Internet and stands ready to help end users and systems administrators beef up security on their Unix systems.

Called Merlin and available at no cost, it is a tool for managing other tools, according to its author, John Fisher. The software provides a simple graphical user interface to a number of popular security scanners, including Tiger, Cops, TripWire and Crack.

Merlin provides an easy-to-use front end for those tools, allowing users to initiate execution by pointing and clicking. More importantly, it takes voluminous and unstructured output from scanners and presents it in consistent, user-friendly report formats.

Tiger and Cops are tools for probing systems and identifying various security holes. TripWire takes periodic snapshots of a system and compares them with earlier snapshots, highlighting changes to files that could suggest the presence of a Trojan horse or addition of an unauthorized user.

Crack scans password files and identifies poorly chosen passwords that are easy to guess. Tiger, Cops, TripWire and Crack are all freeware available on the Internet.

The trouble with those tools is that they are difficult to use by people not intimately familiar with them, said William Orvis, a Merlin user at Lawrence Livermore National Laboratory in Livermore, Calif.

"Each one has a different interface and produces a huge file of information, and then you have to sift through it," Orvis said. "For example, your output file might say, 'You have error 2713,' and then you'd have to go to some other file to find out what that means."

Merlin was posted on the World Wide Web site of the laboratory's Computer Emergency Response Capability (CIAC) last month. It has received no publicity but is downloaded by about 100 users a week, said Fisher, a CIAC computer security specialist.

Easy to use

Merlin embeds Hypertext Markup Language codes in the output files so that a user can simply click on "2713" and pull in the error description from another file, Orvis said. It also has the ability to sort reports based on the type of tool used, creation date or host where the report was produced.

"Merlin takes a bunch of diverse, user-unfriendly pieces of software and sets them up so you don't have to be a super-techie to use them," he said.

Merlin is written in Perl and uses the Web browser software from Netscape Communications Corp. in Mountain View, Calif., as its front end. It is easily modified, using on-line documentation, to encompass other report-producing tools, Orvis said.

Fisher said organizations with Unix computers connected to the Internet should regularly run scanners such as Cops, TripWire and Crack. Merlin would make that practical to do by relatively unsophisticated users, he said.

Merlin works with scanners on a single host, but Fisher said he might develop a version to scan all Unix hosts on a LAN. "There is a lot of interest in a distributed version, but that is not trivial to do," he said.

Merlin is available at http://ciac.llnl.gov.

RECENT INFORMATION SECURITY PRODUCT ANNOUNCEMENTS

COMPANY	PRODUCT	PRICE
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Cylink carol@cylink.com	**SecureDomain** Hardware for security of multiprotocol networks and subnetworks.	$9,500
	SecureManager Software for security configuration, diagnostics and status information.	$20,000
Elementrix Technologies mais@elementrix.co.il	**Power One Tim Pad** PC-based encryption software that uses one-time keys to ensure secure E-mail and file transfers.	$198 to $245
Integralis info@integralis.co.uk	**Mime sweeper** Windows NT-based software that scans incoming E-mail for viruses and other suspicious traits.	$5,000
Open Market http://www.openmarket.com	**Secure WebServer 2.1** Software that supports both the Secure Hypertext Transport Protocol and Secure Sockets Layer standards.	$4,995
Premenos http://www.premenos.com/	**Templar for Windows** Software for EDI over the Internet; uses encryption for authentication, data integrity and non-repudiation.	$449 (Windows 3.1); $5,990 (Windows NT)
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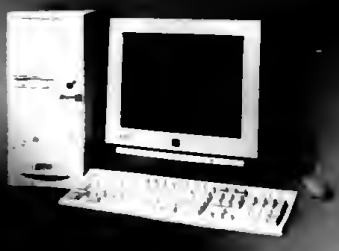


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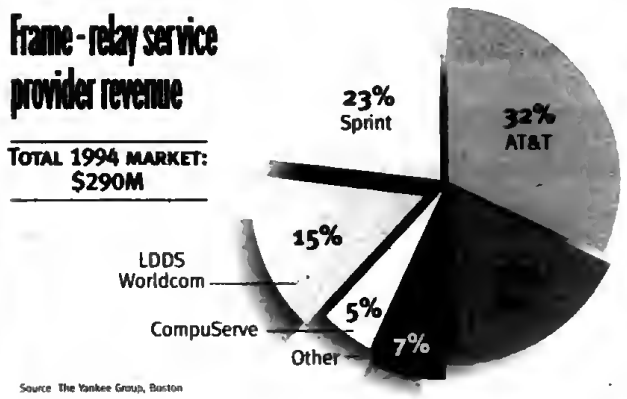
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Frame relay wins user hearts

Transport found to be a less expensive, more efficient alternative



By Neal Weinberg

It's not as glamorous as Asynchroeous Transfer Mode (ATM), as fast as Switched Muitimegabit Data Service (SMDS) or as versatile as Integrated Services Digital Network (ISDN).

ft doesn't even have its own acronym.

But frame relay has emerged as the overwhelming choice of corporate users looking for the cheapest, most efficient way to send data to multiple locations across long distances.

Frame-relay revenue in the U.S. will reach $t.2 billioe this year, compared with $200 million fnr ATM and $2t million for SMDS, according to Vertical Systems Group in Dedham: Mass. And frame relay is in a steep growth curve that will take it to more than $5 billioe in worldwide revenue by t998. Even with the anticipated surge in ATM over the eext few years, frame relay is still expected to have triple the revenue nf ATM in 1998.

Top dog

Frame relay's dominant position among the new breed nf high-speed wide-area network transports appears tn be backing SMDS into s niche, relegating ISDN to the realm of individual telecommuters and even delaying the deployment of ATM.

Erie Dunne, an analyst at Vertical Systems Group, said frame relay is winning corporate customers because it is a less expensive, more efficient alternative to leased lines. And it is available. By contrast, getting ISDN can be difficult, SMDS is offered by MCf Communications Corp. but not AT&T Corp. nr Sprint Corp., and ATM is still being rolled ont.

"Other things are faster and more glitzy," said Brian Biesecker, manager of enterprise networking at DynCorp in Reston, Va. But frame relay is "the best choice for us because of the cost and the bandwidth you can get on it. ft's the best business chnice," he said.

DynCorp went to frame relay when it moved applications nff the mainframe and set up a distributed LAN system.

"We fnund we were doing a lot of communicatioes between remote sites all across the country," Biesecker said.

He said he didn't have the bandwidth requirements to justify full ATM, was concerned about ISDN's reliability and wanted a less expensive nption than a point-to-point private network. All roads led to frame relay.

Biesecker said the system has proved "very stable" in transmitting large data files and electronic mail tn eight locations.

"It's been a good choice," he said.

Liberty Diversified Industries, Inc. in New Hope, Minn., used leased lines until it began migrating various divisions off the mainframe and "putting processors out into each [division]," said Dave Danson, director of corporate computing services. Those divisions are in Minnesota, Kansas, Texas and Mississippi.

Danson settled on frame relay because it nffered cost savings and the flexibility to create a fully meshed network in which data can be sent back and forth among all points on the network. Liberty Diversified is still in the process of bringing the system into full swing, but Danson said be hasn't run into any roadblocks thus far.

Cost factor

Minnesota Mutual Life fesurance Co. in St. Paul uses frame relay for LAN connectivity at 15 locations across the country. Network manager Steve Engel said the fact that AT&T priced frame relay with no mileage component made it cost-effective for linking distant locations.

Frame relay was eever expected to gain such currency. At one polet, it was considered a temporary solution that companies would implement until they were ready to go to ATM, which is faster and offers voice, data and video transmission.

Closer Look: FRAME RELAY

But both the ATM Forum and Frame Relay Forum have come up with protocols that allow frame relay and ATM tn coexist in nne network. What this means, according to Beth Gage, an analyst at TeleChoice, Inc. in Verona, N.J., is that users can rue frame relay until they reach its 1.5M bit/sec. bandwidth limit.

At that point, users can swap in an ATM backbone at the central hub of the network and continue to run frame relay at remote locations, Gage said.

For most users, however, frame relay provides all the bandwidth they need. Andy Audet, head nf the Frame Relay Forum's user group, estimates that 80% of frame relay users run their networks at the relatively low speed of 56K bit/sec.

While frame relay is primarily used as a data transport between LANs, the Frame Relay Forum is trying to gain market acceptance for additioeal applications. Those inclede IBM's SNA over frame relay, voice over frame relay and Internet access.

Beyond that, work is being done on dial access tn frame relay and switched virtual circuits, which are more cost-effective and easier to manage than the current permanent virtual circuits.

What does what?
WAN technologies

	Transmission mode	Usage	Speed
Frame relay	Variable-length packets	Data, some voice	56K to 1.5M bit/sec.
ATM	Fixed-length, 53-byte cells	Voice, video, data	1.5M to 622M bit/sec.
ISDN	48-bit packets	Voice, video, data	144K bit/sec.
SMDS	Fixed-length, 53-byte cells	Data	56K to 34M bit/sec.

Frame relay and ISDN: The best of both worlds

Instead of being viewed as competing technologies, users are now beginning tn see ISDN and frame relay as complementary parts of an integrated WAN that runs from the home to the office.

Frame relay is gaining converts as a way for companies to link their LANs. ISDN is winning users as an inexpensive way to give telecommuters high-speed dial-up access to their computers at work.

The next logical step is to create an ISDN-to-frame-relay protocol that would provide the best nf both worlds.

Steve Engel, network manager at Minnesota Mutual Life Insurance, said he is looking forward to an ISDN-to-frame-relay connection. That way, he could take small, remote sites that don't warrant full-time frame-relay service and provide them with dial-up ISDN.

The ISDN router would dial directly in to the frame-relay connection, which would "minimize cost all around," Engel said.

ISDN sales are growing at an annual rate of 60% a year, according to Bell Communications Research in Morristown, N.J. The number of ISDN lines nationwide grew from 120,000 in 1992 to 400,000 in 1994. — *Neal Weinberg*

Web sites: Buy or rent?

Location, location, location

Whether you rent or build Web sites in-house, several factors affect the costs, including time and staff dedicated to the project

RENTING	**Design and programming** $5,000 to $30,000	$200 to $300 per month *(rent fee)*	$5,425 to $30,700
BUYING	**Software:** $500 to $1,500 **Hardware:** including server and networking gear, $20,000 to $40,000	**One full-time webmaster:** $60,000 to $120,000	$80,500 to $165,000

This scenario assumes a large company and two months of design and programming. All costs are estimates.

By Kim S. Nash

When Chuck Green, a consultant at Chicago-based Unix consultancy Cim3, wanted to launch a World Wide Web site devoted to African-American business and culture, he knew he didn't have the resources to care for and feed his creation.

"There was no way I could afford to build and run and enhance and just overall do a great job on my own," Green said.

Like many individual and corporate Web novices, Green decided to rent space on the server of a third-party vendor.

It's a pickle

Users face a real puzzle when weighing the economics of keeping Web sites in-house vs. outsourcing the work to any of a growing number of third-party hosting services.

Information systems managers must consider, realistically, what they want to do with a Web site and whether internal technical staff can meet those goals. On top of that, Web hosting services are new and plentiful, which means costs and quality vary wildly.

"The decision to get on-line might be easy, but all the stuff that comes after that ... requires serious thought," said John Krick, an analyst at Dataprо Information Services Group in Ft. Lee, N.J.

In general, IS shops are better off renting, users and analysts said, if the following criteria are met:

- No more than a few thousand users are expected to visit the site per month.
- Little two-way information exchange is expected, whether in the form of electronic mail or other interactivity.
- The company lacks direct access to high-bandwidth telecommunications lines.

In essence, the simpler the site, the better off a user company is farming out the work, said Nate Zelnick, an analyst at Jupiter Communications, a consulting firm in New York.

"You don't want to pay $20,000 for a Unix server, plus all the other costs, if you're going to put up an eight-page brochure about your company and its widgets," he said.

But even the rules of thumb that exist to help users figure out the problem go only so far.

Outside service companies are all over the map with services offered and skills, analysts said. For example, Navisoft, Inc., a unit of America Online, Inc. in Vienna, Va., offers various plans

Monthly rent of $99 and a one-time starter fee of $199 buys a user 50M bytes of storage and up to 5,000 daily hits. For another $100 per month, the amount of storage and number of hits allowed doubles

Columbus, Ohio-based CompuServe, Inc., meanwhile, offers Web hosting programs in addition to its on-line network. In a sample scenario, one-time charges for server implementation, webmastery and E-mail services would cost a company $2,500 plus $650 per month in maintenance fees.

Although rental fees are often lower than the amount of money users spend doing Web work themselves, there are trade-offs, said Ben Narasin, president of Internet Design Group. The New York-based company runs a men's clothing retail site on the Web.

Narasin has swapped total control for savings, he said. For example, not all Web hosting services will let customers run a database on their site, which can hamper users trying to make existing corporate data accessible through the Web, he explained.

http:

On-line employment line



Regardless of the type of technical job you seek, the Web is loaded with listings of open slots.

■ Take **The Monster Board** at **http://www.monster.com.** When last we looked, the board listed 3,850 positions in the U.S. and Canada from 600 companies. But one caveat: Be persistent when searching for key words. A search of "webmaster" turned up no positions out of the 3,850 said to be listed on the site. But substituting "HTML programmer" brought back 100 job postings. Plain old "Web" garnered 35; "Internet" got 100.

■ **America's Job Bank** is one of the most visited Web pages out there. At **http://www.ajb.dni.us** you can view roughly 100,000 listings from the 1,800 state employment agencies that are linked here. Users can also drill to job listings of individual states.

■ Don't be fooled by the extra marketing some services use. For example, the **"virtual job fair"** at **http://www.careerexpo.com** is really just a long list of searchable job openings, surrounded by lots of slow-to-download graphics. There are plenty of positions but little of the interactivity one expects at a real fair.

■ If you want a job in a certain region, individual states often have a Web site. For example, the Omaha Economic Development Council wants potential employees to know that working nearly smack dab in the middle of the U.S. can be as rewarding as toiling on the fast-paced coasts.

■ Check out **Omaha Career Link** at **http://www.omah.org/careerlink.** Several job sites go beyond simple lists of open positions. At **Career Mosaic,** for example, users can read about the companies now hiring – their mission statements, expectations and so on – and get a list of the latest firms to post ads there. See **http://www.careermosaic.com/cm.**

Internet security blanket debuts

By Michael Goldberg

People have used automated teller machines (ATM) for years to withdraw money, deposit checks and make payments with relatively few security problems. Now a Tandem Computers, Inc. subsidiary wants to provide that same cozy feeling to users doing business over the Internet.

San Jose, Calif.-based Atalla early this month unveiled WebSafe Internet Security Processor. Company officials claim the hardware encryption device helps make Internet transactions more secure than existing security methods such as Secure Sockets Layer and Secure Hypertext Transport Protocol.

The product, available now, was designed to encrypt and decode messages containing credit-card data, ATM card personal identification numbers and other electronic information

Playing it safe

Atalla's WebSafe Internet Security Processor

Processor: Mips Technologies' R4000 family
Connectivity: Ethernet using TCP/IP
Encryption support: RSA public key algorithm and DES private key
Price: $12,500

Atalla plans to target banks, credit-card companies and other businesses looking to do Internet commerce, company officials said

Some observers and users think Atalla's hardware approach is complementary and may be better than software for Internet security. Hardware is more tamper-resistant than software, according to Jeff Stapleton, project manager for electronic commerce at MasterCard International, Inc. in St. Louis

Atalla's WebSafe device was designed to zero out its stored encryption information and deny a transaction when it detects the activity of prospective data pirates, according to Atalla.

Standard wanted

MasterCard plans to examine the WebSafe box for potential use in its efforts to develop an industry-standard protocol for secure electronic payments.

MasterCard, along with partners such as IBM, Netscape Communications Corp., GTE Corp. and CyberCash, Inc., last month unveiled such a standard.

The first version of the proposal relies on software-only security, but encryption hardware is expected to be incorporated down the road, Stapleton said.

Allan Schiffman, chief technical officer at Terisa Systems, Inc., a Menlo Park, Calif.-based company that sells encryption code to software developers, said WebSafe could indeed benefit companies that are doing business on-line.

Especially useful, he said, is the product's ability to transmit messages using both public and so-called "private" mathematical keys.

The Rivest Shamir Adleman, or RSA, public keys use different methods for encoding and deciphering messages. The Data Encryption Standard (DES), or private, keys are kept secret by the owner, like a digital signature.



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Cabletron to link big iron, nets

Small shops will gain biggest edge

By Bob Wallace

Cabletron Systems, Inc. promised a full line of switching hub-to-mainframe modules in April, but the entire set still won't ship for a few months.

The Channel Interface Modules (CIM) are being designed to let users bring IBM mainframes into switched internetworks. The modules will let users gradually merge IBM SNA networks with switched networks or provide terminal-to-host access without front-end processors.

The modules are important because mainframes are turning into the endangered species that wouldn't die.

Analysts say user demand for bringing mainframes into switched internetworks is building at a steady pace.

"Some users have been doing this in very specialized environments behind the scenes for a few years," said Rick Villars, director of network architectures research at International Data Corp., a consulting and research firm in Framingham, Mass.

IBM buddy

Cabletron estimates that 27% to 30% of its business comes from IBM connectivity-related products and services.

Users wonder

Cisco Systems, Inc. has mainframe channel attach support, but its proprietary approach gives users pause, Villars said. The Cabletron modules "will bring this networking strategy into the mainstream," he said.

The CIMs work with Cabletron's MultiMedia Access Center (MMAC)-Plus, its high-end switching hub, and support data link speeds to mainframes of 4.5M byte/sec. over coaxial cable and 17M byte/sec. over fiber.

One beta site says small shops stand to gain the most from using the CIM in a Cabletron hub.

Hub-based links to mainframes . . .

- Eliminate the need for large and costly front-end processors.
- Provide higher-speed links to hosts.
- Free up gateway servers for other uses.
- Are easier to manage.

Source: Cabletron Systems, Inc., Rochester, N.H.

"With the [CIM], we can provide our roughly 1,400 terminals access to our mainframe without having to buy a [front-end processor]," said Jay Bromander, a senior network analyst at the Lahey Clinic Medical Center in Burlington, Mass. "Granted, a [front-end processor] can do much more than provide terminal-to-host access, but for small shops like ourselves, a [front-end processor] would be overkill" in function and price.

Users can mix and match the CIM modules, the 9S110-BT and the 9S110-ES, in the MMAC-Plus switching hub.

The planned modules will help users with data warehousing, one of the fastest-emerging and bandwidth-intensive applications.

The CIMs will ship by year's end and offer mainframe access with optional software that supports Microsoft Corp.'s SNA Server or Novell, Inc.'s NetWare for SAA gateway software.

Users who implement the modules with that software won't need an expensive and high-performance server connected to the switching hub to run the gateway software. It is freed up for use as an electronic-mail or application server.

Companies that implement the CIMs will be able to manage the devices from IBM's NetView network management system via an interface provided by Cabletron or from the switching hub vendor's BlueVision/SNA package.

The 9S110-BT will be available in 60 days for $21,995. The 9S110-ES will ship in the first half of next year for $31,995.

LAN monitoring tool lets cables keep working

For network troubleshooters who have to track down cable faults, Psiber Data Systems, Inc. has launched a line of diagnostic tools that don't require a direct connection to a LAN.

The PsiberNet Connectionless LAN Monitor ships over active cables to gather and display traffic information without disturbing network operation. This capability speeds testing and eases observation of intermittent problems, according to the La Mesa, Calif., company.

LAN tools

An inductive coupler reads signals through popular coaxial, shielded twisted-pair and unshielded twisted-pair cable types.

Testing, testing

Simple tests can verify connectivity, track bandwidth use and log traffic from 12 minutes to 24 hours.

The 8-ounce PsiberNet runs on batteries or an AC adapter for extended monitoring. Model 1000 for Ethernet and Token Ring testing costs $595, and Model 1000RS, with an RS-232 interface for downloading captured data, costs $795.

—Patrick Dryden

Briefs

Software tools go on-line

Teknekron Software Systems, Inc. in Palo Alto, Calif., has unleashed an on-line services version of its Enterprise Toolkit communication software tools to be used for secure 24-hour banking and financial services. The product contains encryption and authentication software from RSA Data Security and Remote Object Framework technology for handling high-volume network traffic.

Network General rolls out ISDN product

Network General Corp. last week announced that its ISDN Package will let network managers with its Sniffer Internetwork Analyzer examine network analysis for two types of Integrated Services Digital Network (ISDN) links: ISDN Basic Rate Interface and the higher-speed ISDN Primary Rate Interface. The Menlo Park, Calif., firm will ship the ISDN Package in January. Pricing hasn't been determined.

On-line payment system unveiled

Nynex Corp. and **The Chase Manhattan Bank NA** have unveiled a prototype payment system designed for interactive TV and on-line computer shopping. The system will be available next year as Nynex deploys wireless and wireline networks throughout the Northeast.

Bridge to Internet debuts

VeriFone, Inc. in Redwood City, Calif., has introduced a software package, Payment Transaction Application Layer, that was designed to function as a bridge between payment networks and the Internet.

NetSuite Development L.P. has introduced NetSuite Professional Design, a network-aware design system.

According to the Wayland, Mass., company, NetSuite Professional Design lets network administrators build and maintain a living model of an entire physical network. It was designed to treat network organization as a process and builds in the intelligence to validate designs automatically.

NetSuite Professional Design features network-aware objects; a network object library that contains more than 1,500 devices from the product lines of more than 50 networking vendors; full LAN and WAN support; real-time design validation; network topology validation; and physical asset reporting.

NetSuite Professional Design costs $995 for a single-user license.

▶ *NetSuite Development*
(508) 647-3100

Denmac Systems, Inc. has unveiled AlertPage 2.0 for Novell, Inc.'s NetWare.

According to the Northbrook, Ill., company, AlertPage 2.0 is an advanced proactive alarm management and dispatch program for Novell networks. It can monitor file servers and network IP or IPX devices.

It was designed to help network managers reduce downtime by providing constant, unattended surveillance of a range of network devices, including hubs, routers, switches and workstations. The status of each device is posted on a monitor that also includes a point-and-click, context-sensitive, on-line help system.

AlertPage 2.0 is configurable and has an Intelligent Device Filter that allows devices to be placed into groups and screened according to group severity and device status. The filter can also send multiple pages for any device error. And it can log in alarms to an underlying database.

Pricing for AlertPage 2.0 starts at $179.

▶ *Denmac Systems*
(708) 291-7760

U.S. Robotics, Inc. has introduced the PRI Access System for the Total Control Enterprise Network Hub.

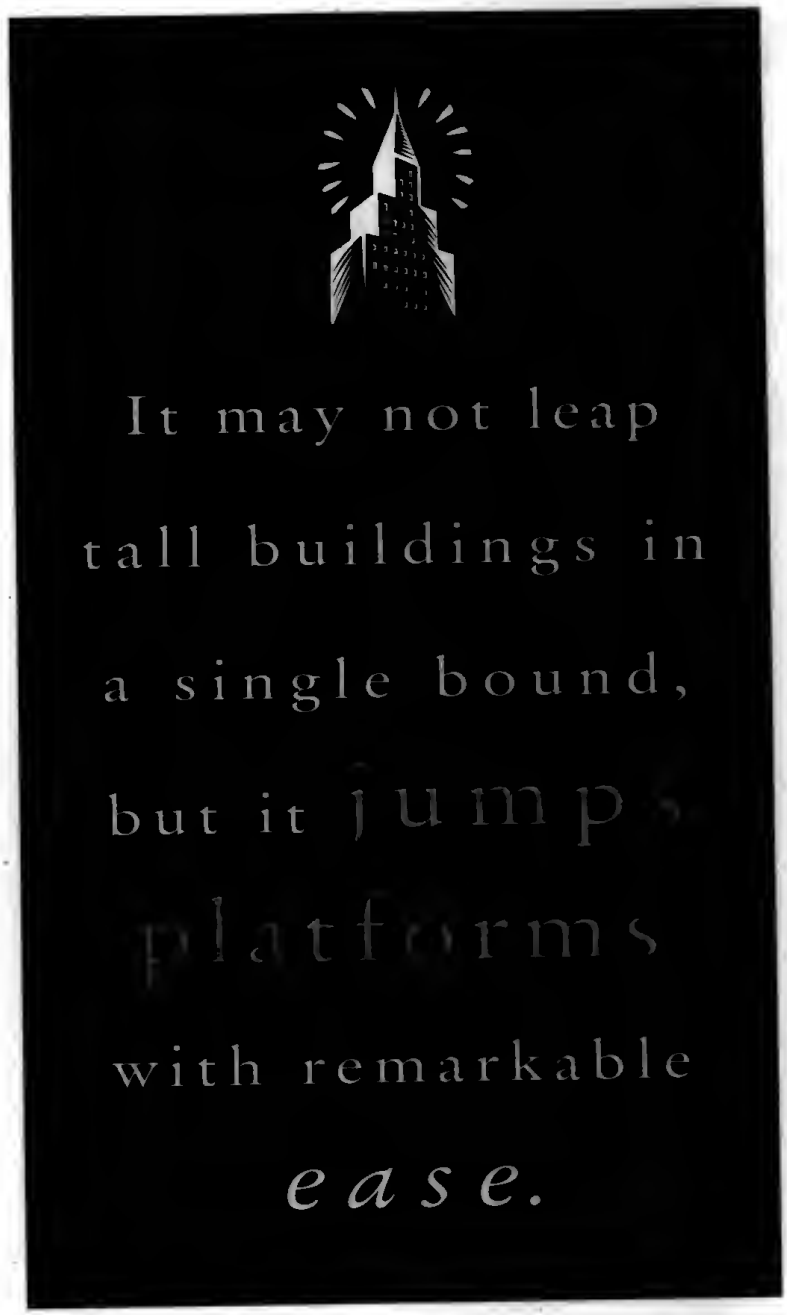
According to the Skokie, Ill., company, the PRI Access System allows customers to add Integrated Services Digital Network (ISDN) Primary Rate Interface (PRI) capabilities to existing Total Control Enterprise Network Hubs. The PRI Access System automatically detects call types and negotiates the highest speed; connect rates of up to 33.6K bit/sec. for analog and 56K bit/sec. or 64K bit/sec. for ISDN connections.

The PRI Access System was designed for service providers and eliminates the need to dedicate separate equipment for different connections.

The package includes a PRI card set, which supports two PRI spans, a NetServer remote access server card set, and software upgrades for modem cards. As many as five PRI card sets can be installed in a chassis.

One PRI card set costs $5,995. The NetServer remote access server card set with ISDN support costs $11,995.

▶ *U.S. Robotics*
(708) 982-5010

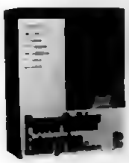


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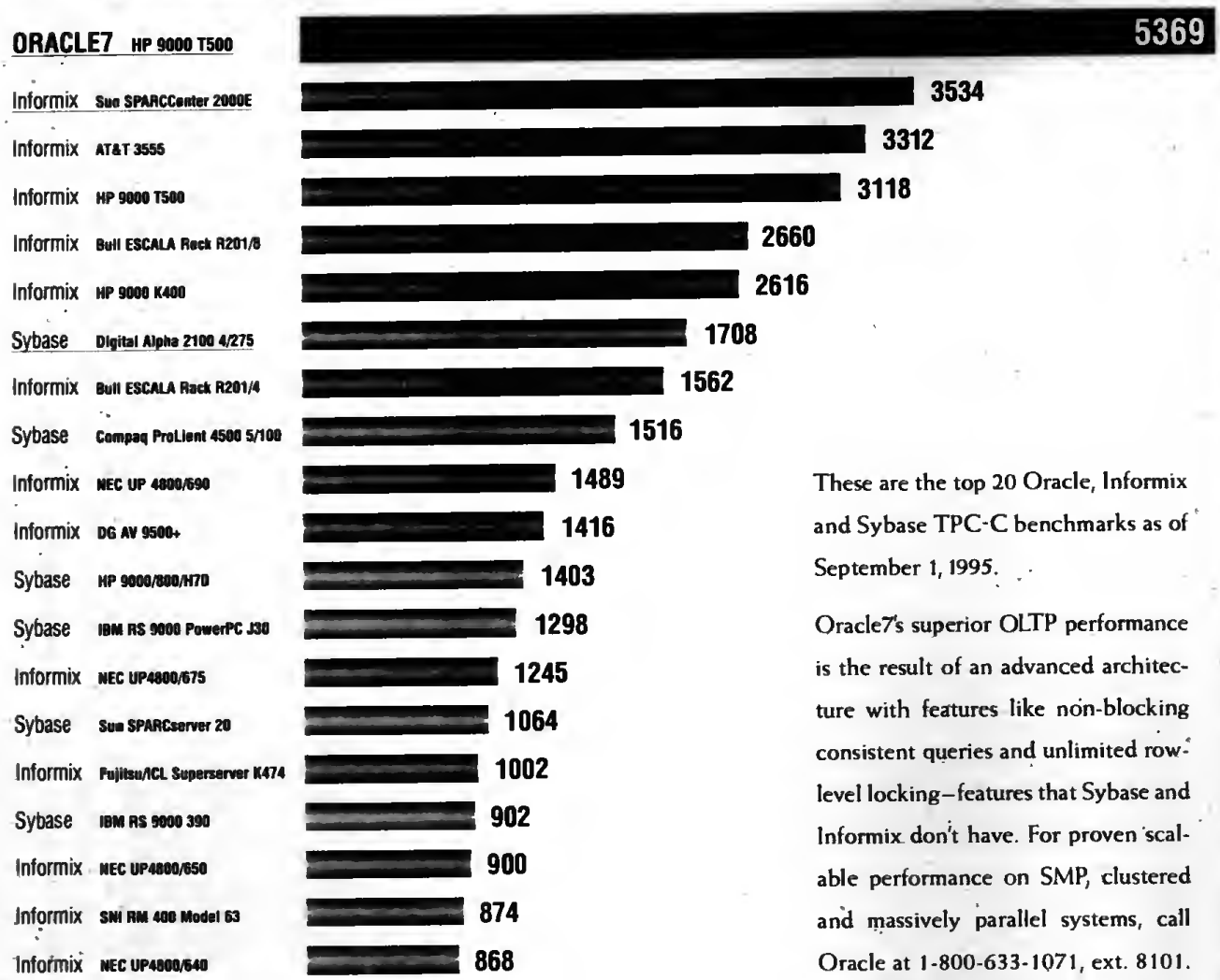
Database Performance

The TPC-C™ benchmark is the industry standard test for measuring database On-Line Transaction Processing (OLTP) performance. On July 24, Hewlett-Packard published the record-setting 5369 tpmC Oracle7 benchmark.

ORACLE7
BEST: 5369 tpmC

Informix
BEST: 3534 tpmC

Sybase
BEST: 1708 tpmC



These are the top 20 Oracle, Informix and Sybase TPC-C benchmarks as of September 1, 1995.

Oracle7's superior OLTP performance is the result of an advanced architecture with features like non-blocking consistent queries and unlimited row-level locking—features that Sybase and Informix don't have. For proven scalable performance on SMP, clustered and massively parallel systems, call Oracle at 1-800-633-1071, ext. 8101.

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NEW PRODUCTS, 48

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IBM finally joins Unix database club

Analysts say DataJoiner release will bring Big Blue up to speed

By Craig Stedman

After years of playing catch-up on Unix database technology, IBM finally is starting to pull up alongside the likes of Oracle Corp. and Sybase, Inc., users and analysts say.

As part of its continuous push to become a more worthy alternative to those vendors, IBM recently added to its product line middleware, called DataJoiner, that can find files in multiple databases. The release follows deliveries earlier this year of an improved version of IBM's DB2 for AIX database and a Unix-based tool for administering DB2, Oracle and Sybase servers.

With DataJoiner, end users can access distributed sources of relational and nonrelational data through a single SQL query as if the sources were local. The middleware gathers and joins data from IBM databases and rival offerings without requiring users to know where the desired information is (see chart, top right).



Middleware on track

With additions such as DataJoiner, the back-end portion of IBM's open systems database family "is ready to become competitive," said Richard Finkelstein, president of Performance Computing, Inc. in Chicago.

Making up for lost ground

Oracle and Sybase have had similar products on the market for more than a year, and Information Builders, Inc.'s EDA/SQL gateway software also provides mixed database access. However, analysts said a query optimizer built into DataJoiner speeds up the joining process and helps make up for IBM's late start.

"Of all the [data access] products on the market, DataJoiner is probably the most intelligent in its ability to optimize queries and get at data," said David McGoveran, president of Alternative Technologies, a database consultancy in Boulder Creek, Calif.

IBM also supports standard ANSI SQL querying language; Oracle and Sybase use their own SQL implementations. Nonetheless, the kind of data access tools you buy "very much depends on what kind of applications you have," McGoveran said. Heavy Oracle or Sybase shops aren't likely to be interested in DataJoiner unless they first go for DB2 for AIX in a big way, he added. But DataJoiner should appeal to mainframe-oriented customers who aren't so far down the Unix database road.

The database access capabilities that DataJoiner provides "certainly will become an issue soon," said Marco Chou, a database systems consultant at Allstate Insurance Co. in Northbrook, Ill.

Allstate runs DB2 for MVS on its mainframes and is using Oracle, Sybase and DB2 for AIX in distributed setups. "We're pretty much business- and user-driven, and right now we haven't got the business justification" to provide mixed database access, Chou said. "But eventually, people will want to interface with databases in different departments."

Roger Johnson, technical manager of the relational database group at L. M. Ericsson Data AB in Stockholm, agreed. "If you talk about data warehousing, you can begin to see the importance of users being able to access data from multiple databases," he said.

The Swedish company has been beta-testing DataJoiner since February in an environment that mixes DB2 for MVS and AIX with Oracle and Sybase products.

Ericsson Data hasn't done formal performance benchmarks, but DataJoiner seems best suited for warehousing and other decision-support applications, Johnson said. The middleware lacks features needed for transaction processing, such as the ability to update multiple databases in one fell swoop, he added.

Jeff Jones, brand manager for database systems management at IBM, acknowledged that DataJoiner for now is skewed toward reading decision-support data. IBM may add support for simultaneous updates, but it isn't clear whether that will happen in the next release, Jones said.

DataJoiner is built on top of DB2 for AIX Version 1 and runs on an IBM RS/6000 server that sits between databases and desktop clients. Jones didn't say when it will be upgraded to Version 2 of DB2, which adds items such as triggers and stored procedures.

Joint custody

IBM's DataJoiner data access software supports the following platforms:

Server	Client	Source databases
DB2 for AIX	Windows	DB2 (all platforms)
DB2 for HP-UX*	DOS	Oracle
DB2 for Solaris*	AIX	Sybase
	HP-UX	IMS
	Solaris	VSAM flat files
	OS/2	MS-SQL Server

Base price	Price per user	
	5 users	50 users
$5,000	$759	$675.50

* Plans to support

Consult users early, often

Price Waterhouse system goes up in just four months

By Julia King

You can't blame Lucyna Janociak for being sick and tired of meetings. For four months, beginning last December, she sat through dozens of them, sometimes for what seemed like an eternity.

"I was in meetings constantly, and sometimes they went on for hours when we couldn't reach a conclusion," Janociak recalled. She is a senior assistant at Price Waterhouse's Tax Technology Group (TTG), which develops and sells tax management and retirement planning software.



"We had to really understand how users do their jobs and look and analyze how they were doing things in terms of other business units."

Doug Coker

For all her efforts, Janociak — and other business users who participated in system design meetings — today has "a very simple system that has absolutely everything I need in it," she said.

Meanwhile, Doug Coker, information systems manager of the TTG, describes the same client/server system as one of the most complex his group has ever built. The system is a yet-to-be-named suite of integrated applications that automates processes such as order entry and shipping.

The system automatically initiates credit authorization checks on credit-card orders and generates bar-coded mailing labels. The labels are scanned as products are shipped so that inventory figures can be updated. The applications also draw their information from the same Sybase, Inc. database.

Coker said his five-person IS team built and deployed the new system in near-record time, thanks largely to information provided by Janociak and other users.

The TTG system's order entry, customer registration and inventory applications were developed in Powersoft Corp.'s PowerBuilder. They were delivered within the past 12 months, and the total cost of the project was under $1 million, Coker said. The distribution application, the first delivered, took only four months.

The system comprises Sun Microsystems, Inc. SPARCservers. Clients use 486- and Pentium-based PCs running Microsoft Corp.'s Windows NT, Windows for Workgroups or Windows 95.

Out with the old

The applications replace a series of standalone homegrown systems. Over the years, these had become impossible to maintain, Coker said. Extracting reports was very difficult and time-consuming.

"It always involved a programmer to get and then massage the data into a format that made any sense. A simple five-minute report ended up taking hours to days to get out," he said.

To keep track of the hundreds of data flows and to create data models during design, Coker used Visible Systems Corp.'s PC-based Visible Analyst Workbench computer-aided software engineering tool. Every hour spent with users on design saves IS about five hours of coding, Coker said.

Involving users early on to speed up systems development isn't exactly new advice. Still, it remains something many IS developers fail to do on a regular basis because "it takes more time initially. You can't just sit down and code," said Judith Hurwitz, president of Hurwitz Consulting Group, Inc.

Hyperion Software Corp. has introduced Pillar 2.0, a global budgeting and planning accounting software package.

According to the Stamford, Conn., company, Pillar 2.0 is an integrated system for budgeting, analysis and forecasting. It was designed to help organizations manage the budget process.

Pillar 2.0 includes processes for finance staff to develop models and for line managers to create budgets. Users can then analyze and review a budgeted plan. The product manages the mechanics of this process and provides tools for analyzinghusiness scenarios.

Pillar 2.0 automatically replicates the standard model to create a model of the enterprise.

Pricing for Pillar 2.0 starts at $45,000 for a 10-user system.

▶ *Hyperion Software*
(203) 321-3500

Idea Corp. has announced the I-Series of twin-axial communications controllers for IBM's AS/400 and S/36 and System/38 markets.

According to the Billerica, Mass., company, the I-Series is part of Idea's Concert family of commnications processors. It has plug-and-play features and a simple configuration.

Model I10200 was designed for small, remote sites equipped with unshielded twisted-pair wiring. It provides an active inierface at each port that uses active star technology, which eliminates the need for aftermarket 5250 hubs. Pricing for the I10200 starts at $1,995.

Model I19300 offers twin-axial, 5x94-type coanectivity for medium-size sites. Host access is supported over Synchronous Data Link Control/X.25 or Token Ring connections. Pricing for the 110300 starts at $2,595.

▶ *Idea*
(508) 670-8504

Micro Design International, Inc. has introduced two large-capacity optical jukeboxes: SCSI Express Library 166MXT and SCSI Express Library 309MXT.

According to the Winter Park, Fla., company, the jukeboxes were designed for archival and document imaging applications. They provide immediate access to a data warehouse. They use a dual-transport mechanism by which two optical discs can be moved at the same time.

SCSI Express Library 166MXT uses four high-speed, multifunction drives to read and store up to 166G bytes of information on 1.3G-byte 128 optical cartridges.

SCSI Express Library 309MXT uses six drives to read and store up to 309G bytes of information on 1.3G-byte 238 optical cartridges.

Pricing starts at $40,000 for the 166MXT model, and $65,000 for the 309MXT model.

▶ *Micro Design International*
(407) 677-8333

Serena Software International, Inc. has introduced SyncTrac 4.1.0, an IBM MVS environment synchronization and change tracking product.

According to the Burlingame, Calif., company, SyncTrac 4.1.0 was designed to address the business resumption needs of MVS data centers. It simplifies the disaster recovery process by reducing downtime. The product also verifies data and software synchronization between the production data center and the recovery site.

SyncTrac 4.1 0 includes an Intelligent Masking Facility that compares multiple load modules to determine if they are compiled from the same source and quickly verify source-to-load integrity of software libraries.

Pricing for SyncTrac 4.1.0 starts at $20,000.

▶ *Serena Software International*
(415) 696-1800

Client/server systems get own repositories

By Dan Richman

Repositories aren't just for mainframes anymore.

At the Data Warehousing Conference in Phoenix last week, Platinum Technology, Inc. introduced a repository that runs under Microsoft Corp.'s Windows NT and IBM's OS/2.

Repositories are specialized databases that store various items to help developers keep track of components within programs. In addition to storing data, repositories can store precompiled queries from end-user query tools and output from computer-aided software engineering (CASE) tools.

Most of the repositories on the market run on mainframes, but that is starting to change. Their availability on client/server operating systems means that sites unable or unwilling to use mainframes can still benefit from repositories.

Many options

Unlike the mainframe version of Platinum's repository, which stores data only in IBM's DB2 under the MVS operating system, the new Open Enterprise Edition runs data that is stored in Oracle Corp. or Sybase, Inc. databases. Versions for IBM's AIX, Hewlett-Packard Co.'s HP-UX and Sun Microsystems, Inc.'s Solaris for SPARC are promised by year's end. Platinum is based in Oakbrook, Ill.

At least one other repository — Rochade from R&O, Inc. in Westford, Mass. — also runs on systems other than mainframes. But Rochade uses a proprietary language to access and manipulate the data within the repository, whereas Platinum's product uses the industry-standard versioo of SQL.

Rochade also works only with its own integrated database rather than with popular relational database management systems such as those from Oracle and Sybase, an R&O official acknowledged.

Output stored

Like its DB2/MVS implementation, the client/server implementation of Platinum's repository stores output from CASE tools, including Texas Instruments, Inc.'s Information Engineering Facility and Sterling Software, Inc.'s Key for Workgroup (formerly known as KnowledgeWare, Inc.'s Application Development Workbench). It also stores queries from several end-user query tools, such as Platinum's Forest & Trees and SQL Assist, Business Objects, Inc.'s Business Objects and Information Builders, Inc.'s Focus.

The new repository is available immediately and costs $20,000.

Beta user Abbas Faiq, manager of database architecture at CVS Pharmacies in Woonsocket, R.I., said, "We anticipate saving a lot of time and money by using the repository to learn how changes we make to mainframe or Unix programs will ripple through other apps."

Refining the database

Besides client/server repository products, Platinum Technology also has introduced InfoRefiner 3.0, a Windows application. Known in earlier versions as Pipeline, it lets administrators point and click to select data sources, targets and Boolean operators governing how data should be moved from DB2 under MVS to Oracle, Sybase, Informix, Microsoft SQL Server or DB2/6000. InfoRefiner 3.0 costs $200,000 and is available now.

Briefs

Cabrinetti leaves Digital

Lawrence P. Cabrinetti, vice president of Digital Equipment Corp.'s components division, left the firm Sept. 29.

IMS utilities on the way

BMC Software, Inc. in Houston recently introduced a series of utilities to manage IBM's hierarchical IMS mainframe databases. The Extended Performance line loads data up to 50% faster than BMC's DB Utilities for IMS and supports concurrent reorganizations of multiple databases.

Data warehouse project

Informix Software, Inc., KPMG Peat Marwick and Digital said they will collaborate on a data warehouse product and services offering. The effort, which will use 64-bit systems to address large Informix relational databases, is aimed at manufacturing, financial, retail and telecommunications users.

SSA disk arrays planned

IBM and Siemens Nixdorf Informationssysteme AG agreed to jointly develop and market mainframe and client/server disk arrays based on the Serial Storage Architecture (SSA) interface. The products will be part of IBM's next-generation Seascape storage architecture, a multiplatform offering scheduled to debut next year. Siemens Nixdorf, which is developing a line of disk arrays for sale to other vendors, said it will provide IBM with devices that link SSA drives to SCSI and Fiber Channel Standard host interfaces.

Latest version of Acumate ES database does more with less

By Dan Richman

A new version of Kenan Technologies' Acumate ES multidimensional database stores more data in less space and lets users modify database structures without shutting down servers, an early user said.

The product is scheduled to ship this month.

"These are significant improvements, ones I'd rate a seven or eight out of 10 in terms of importance," said Russ Gazaille, director of systems development at Hechinger Stores Co., a $1.1 billion chain of home-improvement stores based in Landover, Md.

Version 1.3 of Acumate ES includes features, dubbed attributes, that let Acumate store as much as five times more data in the same space by eliminating redundant data within essentially similar dimensions, according to Gazaille.

Another new feature, ALIShape, allows the database to be changed on the fly, resulting in more uptime.

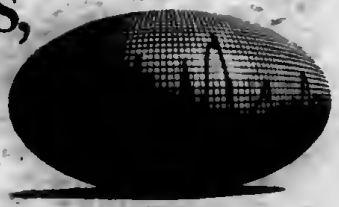
Version 1.3 of Acumate ES runs under IBM's AIX and Sun Microsystems, Inc.'s Solaris for SPARC. Clients for the Cambridge, Mass., company's on-line analytical processing software run under Microsoft Corp.'s Windows 3.1 and Windows 95.

The product costs $25,000 for five users; users with maintenance contracts will receive a free upgrade.



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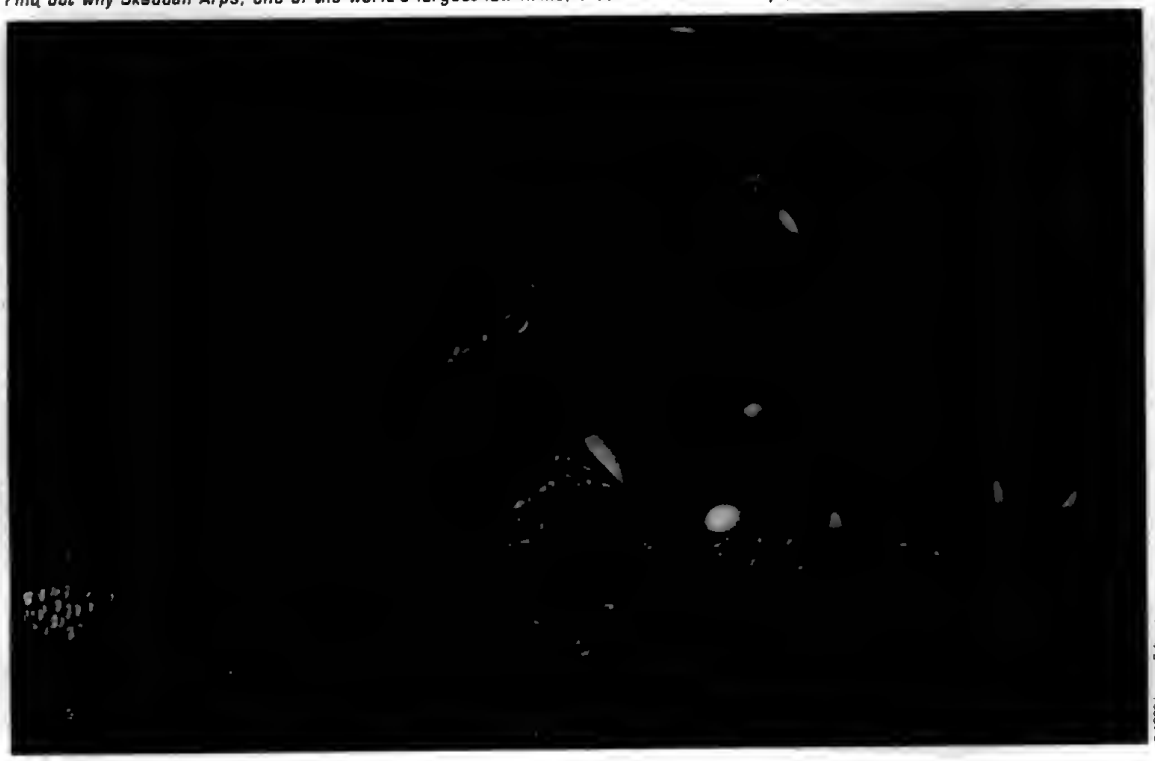
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VENDORS FIND PARTNERS OVERSEAS, 84
NEW PRODUCTS, 84

Briefs

Industrial strength

Rockwell Software, Inc. in West Allis, Wis., has introduced what it said is the first set of OLE custom controls for the industrial automation market. RSTools components, which can be used with Microsoft Corp.'s Visual Basic, Borland International, Inc.'s Delphi and other Windows-based development tools, include a gauge, a thumbwheel and a vessel that appears to fill up. RSTools will ship later this fall.

PowerBuilder bundle

Sybase, Inc.'s Powersoft division in Concord, Mass., will bundle low-end versions of PowerBuilder and database tools for building workgroup applications. The PowerBuilder Portfolio suite includes PowerBuilder desktop, the StarDesigner database design tool and a three-user version of Sybase's Watcom SQL Server. The bundle will ship Oct. 26 for $495.

AT&T GIS to get DCE

Gradient Technologies, Inc. in Marlboro, Mass., will port the Open Software Foundation's Distributed Computing Environment (DCE) to AT&T Global Information Solutions' high-end enterprise servers. As part of a deal with AT&T GIS, Gradient will create a version of DCE for AT&T's MP-RAS 3.0 version of Unix. Both firms will ship the product on Nov. 1 for $2,000.

Vendor links payroll

Client/server applications vendor PeopleSoft, Inc., in Pleasanton, Calif., has announced it will develop a software interface to directly link its human resource software to the third-party payroll processing system of Ceridian Corp. General availability of the interface, which will allow the vendors' software systems to exchange employee, payroll and tax data, is scheduled for the third quarter of 1996.

Scripting carries C++ 5.0

Compiler makes total control 'eminently easy'

By Frank Hayes

The forthcoming 32-bit version of Borland International, Inc.'s C++ development system will give programmers almost complete control over how they create and test software, according to users who have tested it.

Borland C++ 5.0, demonstrated at the recent Software Development '95 East in Washington, is scheduled to ship by year's end.

It includes an object-oriented scripting language that makes controlling any part of the integrated development environment "not only practical, but eminently easy," said Craig Arnush, a consultant in San Diego who is beta-testing the product.

New capabilities

With the new CScript language, developers can control the behavior of Borland's editor, compiler and debugger. The same language can be used to tie outside programs such as productivity tools and electronic mail into the development environment, as well as to script specialized functions or procedures, Arnush said.

"You can set up things like automated testing because you have access to the debugger," Arnush said. Developers can easily integrate configuration management and corporate workflow systems into the Borland environment using the new scripting capabilities, he said.

Elsewhere in the market

Borland's chief competitor, Microsoft Corp., is set this month to ship Visual C++ 4.0, which does not have such extensive configurability.

Borland C++ 5.0 will be officially announced at Comdex/Fall '95. Pricing has not been set.

The new Borland compiler will support OLE custom controls and integrated 32-bit debugging, and it includes a new release of Borland's ObjectWindows Library (OWL) that supports Windows 95 common controls. OWL 5.0 will also include 16-bit emulation of most Windows 95 common controls; that capability will allow developers to give a Windows 95 look to 16-bit applications.

The release will also include support for the Microsoft Foundation Classes (MFC) code libraries. However, Borland won't bundle the actual MFC code with the compiler because Microsoft refuses to license it if Borland also includes OWL in the package, a Borland insider said.

Because corporate standards often dictate using the Microsoft libraries for Windows applications, Borland is considering a number of ways to resolve that problem with Microsoft, including selling OWL to a third party, the source said.

Other highlights from Software Development '95 East

Vendor	Event
Symantec	Shipped Enterprise Developer 2.5
Ivaxc	Announced its Jam 7 development environment for the Macintosh
Visix Software	Announced that its Galaxy development environment will integrate the PowerBroker object system from Expersoft

Start-up hunts Cobol code's hidden secrets

By Frank Hayes

Replacing mainframe Cobol applications with client/server systems is a dream many corporate information systems departments share. Unfortunately, it's not simply a matter of writing or buying a new accounting or manufacturing package.

Hidden in billions of lines of Cobol code are business rules that specify how orders are processed, how credit is approved or rejected and thousands of other details of how businesses are run.

Hoping to simplify the process of identifying those business rules, Scottsdale, Ariz., start-up RE-Genesys Corp. last week began shipping Rule Finder, an analysis tool that enables developers to extract business rules from mainframe Cobol code quickly and automatically.

The tool generates reports that make it much easier to explain business rules to the end users who specify how new systems will work, said Sig Haglund, system migration manager at Electronic Data Systems Corp. in Plano, Texas. EDS is a Rule Finder beta tester.

"It's a vehicle that lets us sit down with users and quickly have a common understanding," Haglund said.

Rule Finder reads in IBM-compatible mainframe Cobol code, including copy books and job control language. It then analyzes the code and extracts the business rules in the form of logical truth tables that even nontechnical users can understand, Haglund said.

Analysts can control how many rules to examine and see them in the form of relationships among programs, high-level program flow, and truth tables that display the program's logic.

There is no automatic way to get the business rules from legacy code to specification- or rule-based development systems such as Composer by IEF from Texas Instruments, Inc. in Plano or ObjectStar from Antares Alliance Group in Dallas.

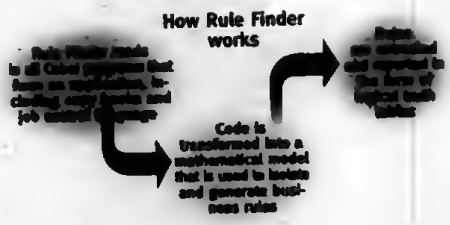
"But even if it was technically possible, would you really want to do that?" Haglund asked. Instead, users can modify the rules before building new systems, he said.

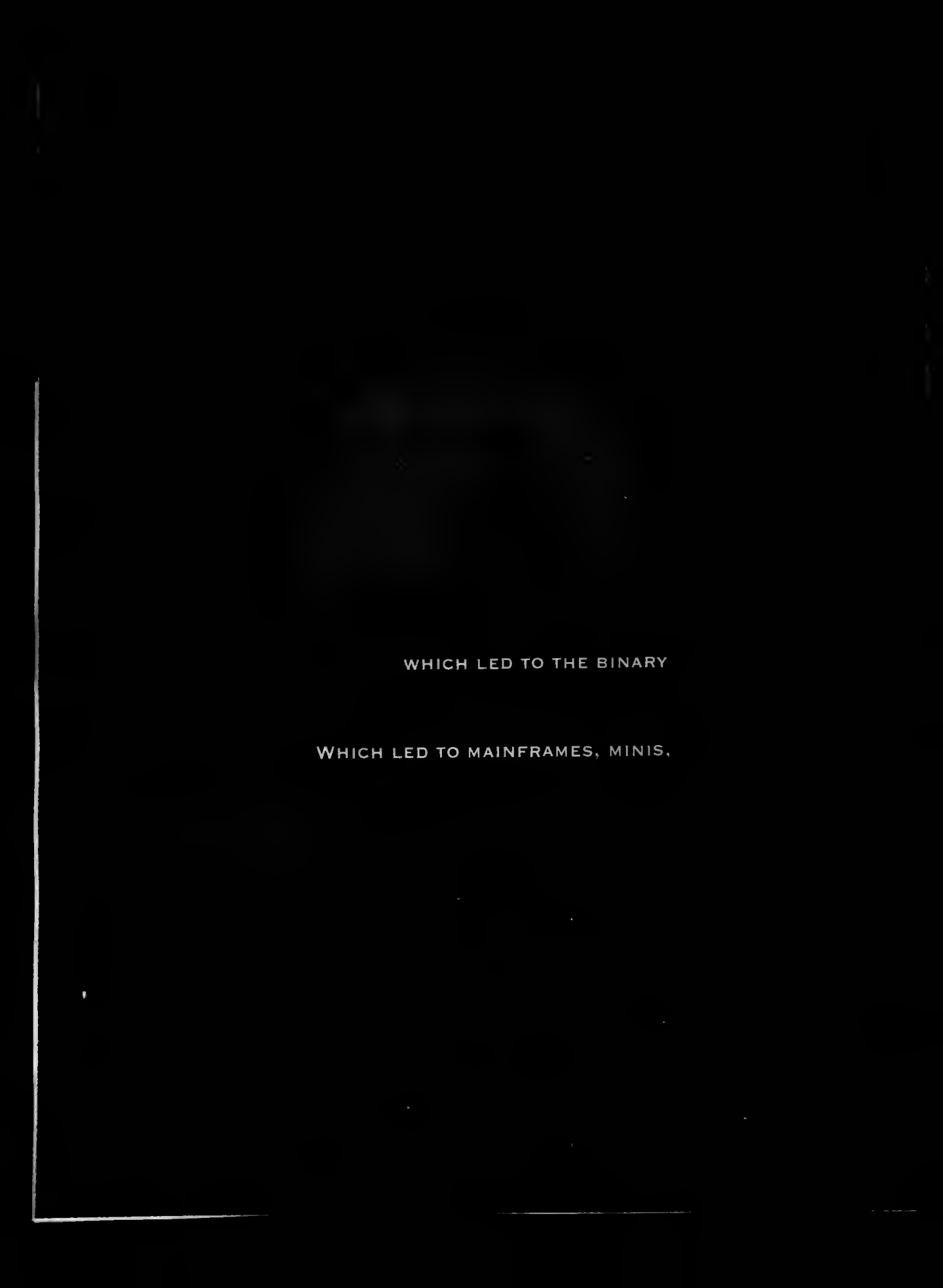
The extracted rules can also be used for tailoring packaged applications that will replace existing systems. Such applications would include the R3 manufacturing system from SAP America, Inc. in Philadelphia or the PeopleSoft Financials system from PeopleSoft, Inc. in Pleasanton, Calif.

The current version of Rule Finder analyzes only Cobol code, but a future version will handle PL/I, the company said. Also, Rule Finder doesn't handle IMS/Data Communications or other databases, but a version supporting the CICS transaction monitor will ship in the first quarter of 1996.

Rule Finder, which runs under Unix, starts at $140,000 for five concurrent users, including implementation services.

How Rule Finder works




WHICH LED TO THE BINARY
WHICH LED TO MAINFRAMES, MINIS,

MARCAM

Vendors find partners across the globe

Universities brew Chinese version of Sun's HotJava

By Veronika Trinkle
HONG KONG

The Chinese are next in line for a cup of HotJava.

Sun Microsystems, Inc. will make its HotJava Internet software available for the Chinese market through a joint technology project with the Chinese University of Hong Kong and Beijing's Qing Hua University. Usually Japan and major European nations are the first international targets for U.S. software developers.

HotJava enables the creation of miniature applications that can perk up home pages on the World Wide Web with animation, music and graphics. The collaboration will allow Chinese-language users to interact on the Internet in real time using Chinese characters.

Sun sees China as such a vast area of opportunity that it was important to move the product onto the mainland before other markets, according to Paul Tham, Sun's marketing director in the People's Republic of China and Hong Kong.

The project starts this month at the High Performance Computing Laboratory at Chinese University's Department of Computer Science. Sun will contribute the hardware and technology to the project, the universities will assign researchers to develop the system.

One issue the development team in Hong Kong faces is changing the algorithm that will convert characters from simplified to traditional forms, said Chi Chi-hung, director of the High Performance Computer Laboratory. It is easy to switch characters from traditional to simplified, but converting the other way is difficult because strokes that are eliminated in simplified characters need to be added to traditional characters, Chi said.

HotJava is still in beta testing; the final release is scheduled for December. The development team in Hong Kong will localize the product during the next few weeks, with the Chinese beta versions to be given to customers by the end of October or early November, Tham said.

He noted that Sun hopes to release the final version in English and Chinese at the same time.

Trinkle is on the staff of *Computerworld Hong Kong*.

International development

France Telecom licenses General Magic's object-oriented programming language

By Michael Parsons

France Telecom has become the first European telephone company to license General Magic, Inc.'s Telescript programming language, which enables intelligent agents to interact with on-line services.

Telescript lets users launch intelligent agents into on-line services to search for and monitor information and to interact with services and other agents. It has an object-oriented, remote programming language and supports multimedia content.

Will Minitel get Magic?

Neither General Magic nor France Telecom would comment on how a commercial Telescript service might integrate with France Telecom's Minitel service. Minitel is one of the world's largest computer applications, with 18 million users in 1994.

"It's a commercial license, but France Telecom hasn't spoken specifically how they will use Telescript in terms of what networks they have or what networks they may be planning," a spokesman for General Magic said.

"They have a lot of options as to how they will pursue it," the spokesman said.

In a press statement on its purchase of the license, France Telecom said it plans to spend more than $200 million during the next four years "to ensure that France enjoys a premier position in multimedia."

Parsons is an IDG News Service correspondent in San Mateo, Calif.

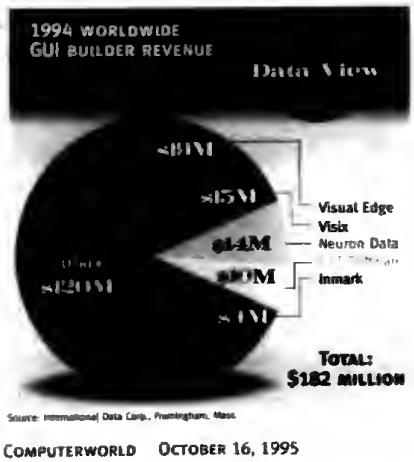
DDC-I, Inc. has announced the Ada Compiler System for Intel Corp.'s 386EX.

According to the Phoenix company, the Ada Compiler System enables high-performance real-time embedded Ada applications to function in very low-power environments. Intel386EX integrates common peripherals, bringing portability to embedded applications, and the compiler provides Ada interfaces to each of these peripherals. That increases their level of reusability.

Low- and high-level Ada specifications give users direct access to status and control registers along with letting them program the peripherals at more abstract levels.

Pricing for the Ada Compiler System for Intel386EX starts at $31,000.

▶ *DDC-I*
(602) 275-7172



LWE Research, Inc. has introduced Mathematics DLL Toolkit 2.2, a Dynamic Link Library-based tool kit of mathematical functions.

According to the Chicago company, Mathematics DLL Toolkit 2.2 was designed to let users write math, science, engineering and statistical executable files in various environments: Borland International, Inc.'s Delphi; Microsoft Corp.'s Windows, Windows 95 and Windows NT; and C and C++. The tool kit has plug-in functions such as statistics and basic math (including hyperbolic and inverse hyperbolic, factorial prime number search and fibonacci), matrix math (including matrix transposition, matrix inversion and least square multiple regression), unit conversions and engineering calculations.

Mathematics DLL Toolkit 2.2 is available for 16- or 32-bit platforms. Pricing for the 16-bit products starts at $175 and at $300 for the 32-bit products.

▶ *LWE Research*
(312) 684-7004

Transarc Corp. has rolled out Encina 2.0, a Distributed Computing Environment (DCE)-based transaction processing monitor for three-tier, enterprisewide client/server environments.

According to the Pittsburgh company, Encina 2.0 gives users Encina++, a distributed object development environment, and a graphical user interface tool for system administration. Encina++ supports rapid application development and reuse of Encina code through C++ class libraries.

Encina++ was designed to reduce the programming effort required for underlying DCE communications. It automatically establishes DCE security mechanisms and object location services without additional code generation.

Pricing for Encina 2.0 starts at $150 for a single client, with server software starting at $5,500.

▶ *Transarc*
(412) 338-4400

Client Server Designs, Inc. has introduced LEAD (Logical Entity Action Design) 1.0, a development tool that links computer-aided software engineering tools to Gupta Corp.'s 4GL SQL Windows environment.

According to the Menlo Park, Calif., company, LEAD 1.0 is an object-oriented development method consisting of the LEAD Model and the LEAD Toolkit. Developers can use the LEAD Model to develop client/server applications or adapt legacy systems to that environment. The Toolkit incorporates a data generator, which populates a database for immediate testing, an application generator and a class library.

LEAD 1.0 automatically generates master-detail forms, letting users view data in familiar formats. It also lets users leave notes or attachments anywhere inside that database, allowing the information to be shared by anyone using the application.

Pricing for LEAD 1.0 starts at $1,395. LEAD's QuickObject Class Library costs $695.

▶ *Client Server Designs*
(415) 321-5338

Intek Technologies, Inc. has introduced Vivid Clarity 1.1.

Vivid Clarity 1.1 is a high-performance data modeling tool that provides integrated visual modeling for databases and client/server development tools including Powersoft Corp.'s PowerBuilder.

According to the Atlanta company, the product lets users create and store data models in an Object Gallery, which uses Microsoft Corp.'s OLE technology to store reusable objects, specifications, project schedules and calculations.

Vivid Clarity 1.1 permits data modeling and rapid prototyping by engineering existing databases via analysis and design models or new development. It lets users create single visual models, which are made directly available to the database or visual development tool.

The product accelerates the PowerBuilder development cycle by generating to PowerBuilder directly and mass producing Data Windows. It preserves the window layout and extended attributes and can regenerate the Data Windows if the visual model is modified. It supports all major Data Window types.

Vivid Clarity 1.1 costs $495.

▶ *Intek Technologies*
(770) 953-2350



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Can't we all just get along?

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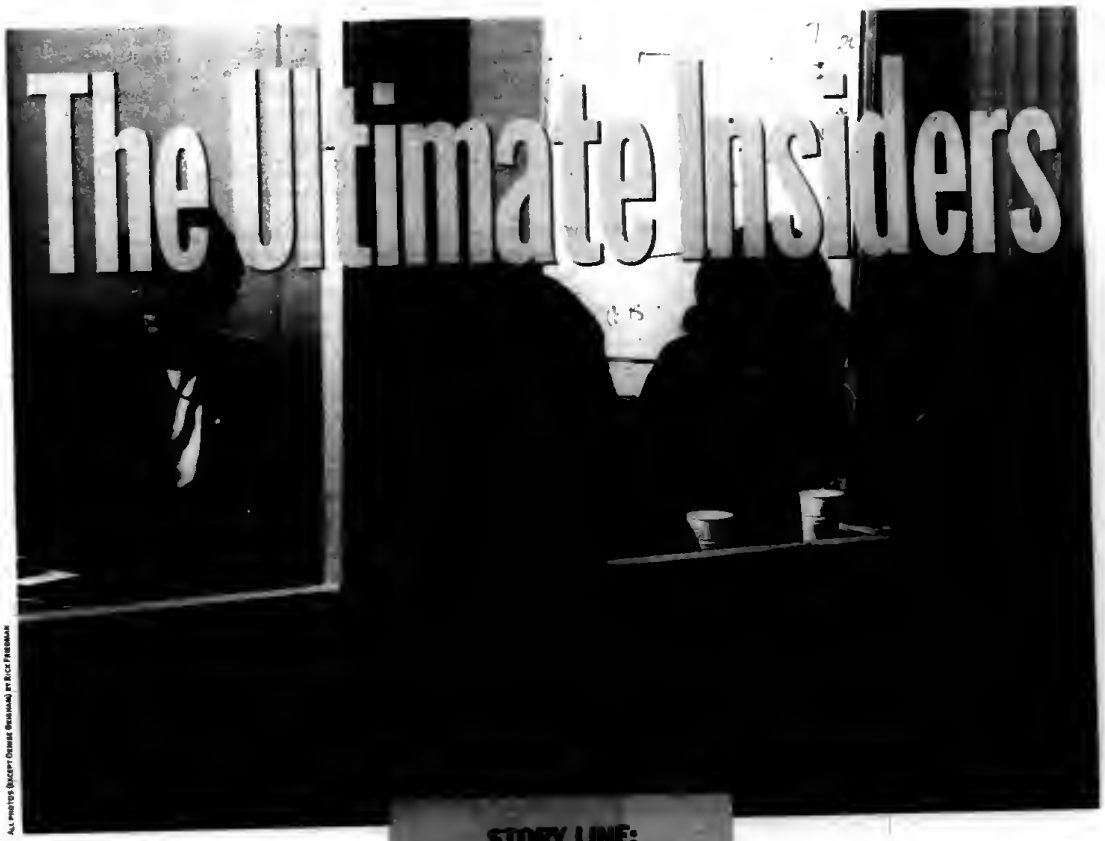


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EXECUTIVE TRACK, *page 96*
CALENDAR, *page 100*

The Ultimate Insiders



ALL PHOTOS BY GEOFF CRAIG ROLAND BY RICK FRIEDMAN

STORY LINE:

Facilitators are the ultimate insiders in your joint application development groups. We get them together to reveal what really goes on when users and IS work together to build new systems. Here's how managers sabotage their own key projects, and how these pros somehow keep them on track.

By DAVID WELDON

JAD facilitators know what fears, secret agendas and managerial screwups really lurk at the heart of your most critical projects

LEIGH MULLIGAN knows the biggest obstacle to project management success — project managers.

Yes, those guardians of critical applications development who ride herd over information systems and business partnerships. Mulligan has seen firsthand their potential to abuse power, dominate underlings and turn unsuspecting group members on one another.

When she joined Liz Claiborne Co. in North Bergen, N.J., last year as a joint application development (JAD) facilitator, Mulligan found the most surprising part of her job was "working with project managers. They are often reluctant to let go and trust us to handle the process. It was a case of, 'I can do that, too.'

"But these are very technical people who got promoted. They did not have project management experience," Mulligan says. "It's a real problem if the projectmanager is telling the user what to do."

JAD facilitators play a key role in the success of a project, keeping executive sponsors involved and participants working together. *Computerworld* invited several JAD facilitators to share what makes a successful project, why JAD goes bad and the hardest issues they wrestle with.

JAD facilitators, *page 88*

Marriage counselors

CONTINUED FROM PAGE 87

JAD facilitators earn their pay by getting tough issnes on the table, hidden agendas ont in the open and feuding "partners" together. Here's how they do the near-impossible.

SHARING THE VISION

Managers must take an active role in a JAD project to guarantee its success

- Be clear on the project's objectives
- Free up the right people for the project
- Stress the importance of the work
- Make sure participants are committed
- Define the group's authority
- Focus on solutions rather than problems
- Resolve issues as soon as they come up
- Be involved with the entire process

CW: How do you get the hard issues out on the table and keep people from avoiding them?

LOFVERS: "Getting issues on the table isn't the hard part. It's channeling the discussion around them. We ask them what they'd like to fix rather than what are the main problems."

DeMAY: "You need people who are the best content experts, who can make decisions on the spot. You may need a cross section from the business, management, human resources [and] IS."

MULLIGAN: "We do a dress rehearsal and do role playing. Then we come up with a plan of action. Oftentimes the issues will come out then."

BALL: "We do Myers-Briggs [personality-type testing] with every-one to help IS and business participants get to know each other's needs."

CW: What are the unstated issues or problems that arise?

LOFVERS: "The most challenging aspect for external consultants acting as JAD facilitators is to work with senior executives. They may appear to be biased."

DeMAY: "Sometimes consultants will run the JAD workshops off-site because of the bias issue. The consultant has no vested interest. One of the toughest issues we have to deal with is overdominating participants or team leaders."

PIERSON: "Also latecomers, interrupters, interpreters — we try to draw out the really quiet ones."

BALL: "The facilitator needs to know what type of people they are, knowing if the individual will resist you."

PIERSON: "Watch out for 'hidden hindrance' — when you can't get people to talk freely because yon don't have the teams made up right. When the facilitator meets with the project's executive sponsor, they have to make sure the sponsor is completely on board, that they are willing to speak to each participant and project leader to get their commitment."

CW: How do you deal with them?

BALL: "Get a hold on problems before you enter the JAD process. You need to make it clear what the project's objectives are and what the team is empowered to do. I like to have a sense ap front what the issues are and when they'll come out. If they don't emerge, ask abont them — to see if they really are issues. At the end of the session, see if you've addressed the points that people talked about or what was expected."

MULLIGAN: "You can't get pinned down. If they're going around in circles, we 'park it' and revisit the issue. But address any open issues before you finish the session."

LOFVERS: "Understand their groap dynamics. Allow for four phases of 'forming, norming, storming and performing.'"

MATTHEWS: "Know when to drive them and when to back off."

CW: What have the most difficult, nasty fights been about?

MATTHEWS: "I've had sessions where people were screaming at each other. It was all very political, who was going to do what. To get over the hump, I'll break them into groups, take them away from the hostile environment, have them role-play and draw pictures of the solution."

CW: What have been the most surprising experiences?

BRIGHAM: "People, because of their personal or work preferences, often have difficulty working in a group. As many are comfortable in a group as are not. Some groups need to be facilitated toward being a team; some don't. I felt that every group I met had to be a team — 'One for all, and all for one!' But I finally realized they don't all have to be teams. We worked at something we did not have to de and blamed ourselves for failing. That held up progress."







ABOUT THE FACILITATORS

JENNIFER F. BALL
Director of corporate facilitation services in the human resources department at National Life of Vermont in Montpelier. Ball is the outgoing president of the Boston Facilitators Roundtable.

NANCY M. DeMAY
An independent consultant at Software Associates, Inc. in South Windsor, Conn., DeMay has worked as a facilitator for eight years. She began her professional career in education.

WALTER B. PIERSON
President of Pierson Applications Development consulting services in Stamford, Conn., Pierson comes from a financial services background and specializes in strategic facilitation and business process re-engineering.

JOY E. MATTHEWS
The new president of the Boston Facilitators Roundtable, Matthews is vice president of training and consulting services at Pierson Applications Development. She has worked six years as a facilitator and started the JAD department at Sony Corp.

LORRI A. LOFVERS
A senior consultant at CSC Consulting & Systems Integration in Newton, Mass., Lofvers has worked for 12 years as a facilitator in JAD and other methodologies.

DENISE BRIGHAM
A systems analyst at L. L. Bean, Inc. in Freeport, Maine, Brigham has worked on facilitation for seven years. Her first exposure to facilitation techniques was a local university course.

LEIGH MULLIGAN
A development center manager at Liz Claiborne Co. in North Bergen, N.J., Mulligan has worked on JAD facilitation for the company for 1½ years. Prior to that, she worked as a facilitator at Paine Webber for 2½ years.

Our seven panelists are members of the Boston Facilitators Roundtable, an association of professional facilitators in various business methodologies, including JAD.



MORE ABOUT JAD FACILITATION

- **The Boston Facilitators Roundtable**, c/o Joy Matthews, Pierson Applications Development, 71 Michael Road, Stamford, Conn. 06903 (203) 322-1606.
- **"Why JAD Goes Bad"** by Rochelle Garner, *Computerworld*, April 25, 1994.
- **"Facilitated Workshops: Empowering the User to Develop Quality Systems Faster"** by Nathan Hollander and Naomi Miriocca, *Industrial Engineering*, October 1993.
- **"The Interpersonal Environments of the Systems Analyst"** by Mark Misic and David Graf, *Journal of Systems Management*, September 1993.
- **Joint Application Design: The Group Session Approach to System Design** by J. August. Prentice Hall, New York, 1991.



JAD FACILITATORS

What they do. Why you need them.

CW: Why do companies need facilitators?

DeMAY: "The facilitator is brought in to be the project leader's partner. That frees up project leaders so they can run with the IS or business issues and let the facilitator get the documentation to users."

CW: What do facilitators do when they are brought in to a project?

MATTHEWS: "A JAD project is done in three phases, and the facilitator is responsible for all three: the preparation work, facilitating the workshop and the follow-up. Groups typically have 12 to 15 members with a 3-to-1 ratio of business users to IS. We go through an introduction for participants and explain what is expected of them, set the ground rules, do team building to warm them up, delegate the work needed and define the information requirements."

BRIGHAM: "We do some work alone, then bring it back to the group. Go out, come together. My role is to keep that continuum going. I try to work so that the members know what is expected of them before they come to the next meeting. I try to make sure the group has all the issues in front of it properly. I ask, 'What have you done? What are you doing? What do you need to do?'"

LOFVERS: "I set the objectives of what the day will accomplish. I make it known I'm taking the project seriously. Brainstorm techniques."

CW: What is your mission?

DeMAY: "The role of the facilitator comes in all flavors. Facilitators establish missions, goals, identify the strategic issues, figure out how to meet the objective. An example would be to obtain input on how to improve a process from the technical people, systems people, businesspeople, human resources."

Beating the clock

When no one has time, everyone has to pull together. The bad news: Facilitators say managers are slowing JAD down. The good news: IS staff has gotten better at working with users.

CW: How do higher-ups thwart success?

MULLIGAN: "We often get big resistance. The biggest problem is the amount of time. We ask for full days and two or three days. Employees argue, 'We can't afford that.'"

DeMAY: "The biggest problems have been with the companies that are downsizing. Everybody's time is too pressed. So getting the right people is key. But managers often have a problem with justifying the cost — the hourly rate of test work time, the travel."

BRIGHAM: "Managers should be participating in the process, but they rarely do. They can help by being sustaining sponsors, being clear with themselves about what they want from the group through the whole process. All of our efforts that failed had only an initiating sponsor.

"I don't see managers hiring the facilitators, and maybe that's what's wrong with this. I always get hired by the group. They think they know what they're supposed to be doing, but a lot of people can waste their time trying to second-guess what the manager wants."

CW: What makes teams or projects go well or poorly?

MULLIGAN: "Our biggest success story was a JAD project for the marketing area. They had a brand-new product they had to build, but they didn't know how to go about developing it. The project manager knew what the marketing department needed, what they'll use it for, and worked closely with the facilitator."

DeMAY: "JAD goes bad when people aren't up-front or have hidden agendas. I've been through a couple of bad JAD sessions. We had good preparation work, everything was going great, the process was beautiful. Then the executive sponsor came in fairly late in the game, changed his mind on what he wanted and quickly identified a new objective."



CW: How can management help you accomplish your mission?

MULLIGAN: "The key to success is taking ownership of the process, and it should be on the business side. The executive sponsor makes sure the message gets out on how important the process is."

BRIGHAM: "The CIO can't be a stranger to the group or the work. They need to recognize the work needed and be clear with people about the process you're trying to solve or the task to be accomplished. Give them the authority. That's very hard for managers to do."

CW: Is IS having an easier time working with users?

PIERSON: "IS is getting the message. They're questioning not just how does business want to get it done, but how would they like to do it in the future?"

LOFVERS: "The IS and businesspeople in a JAD project know each other's names [and] faces and interact with each other. In the past I had to introduce IS to their key users."

MULLIGAN: "The impact of IS working with business users has really turned them around. In the workshops they see the issues come to the surface they've been wrestling with and the business users wrestle with themselves."

DeMAY: "IS people are more valued if they have business knowledge, [and] businesspeople [are more valued] if they understand technology. That's culturally where we're trying to move. It's getting a lot better. People are more open."

Weldon is *Computerworld*'s associate editor, Management

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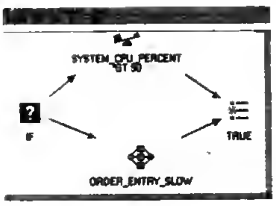
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Application Architecture

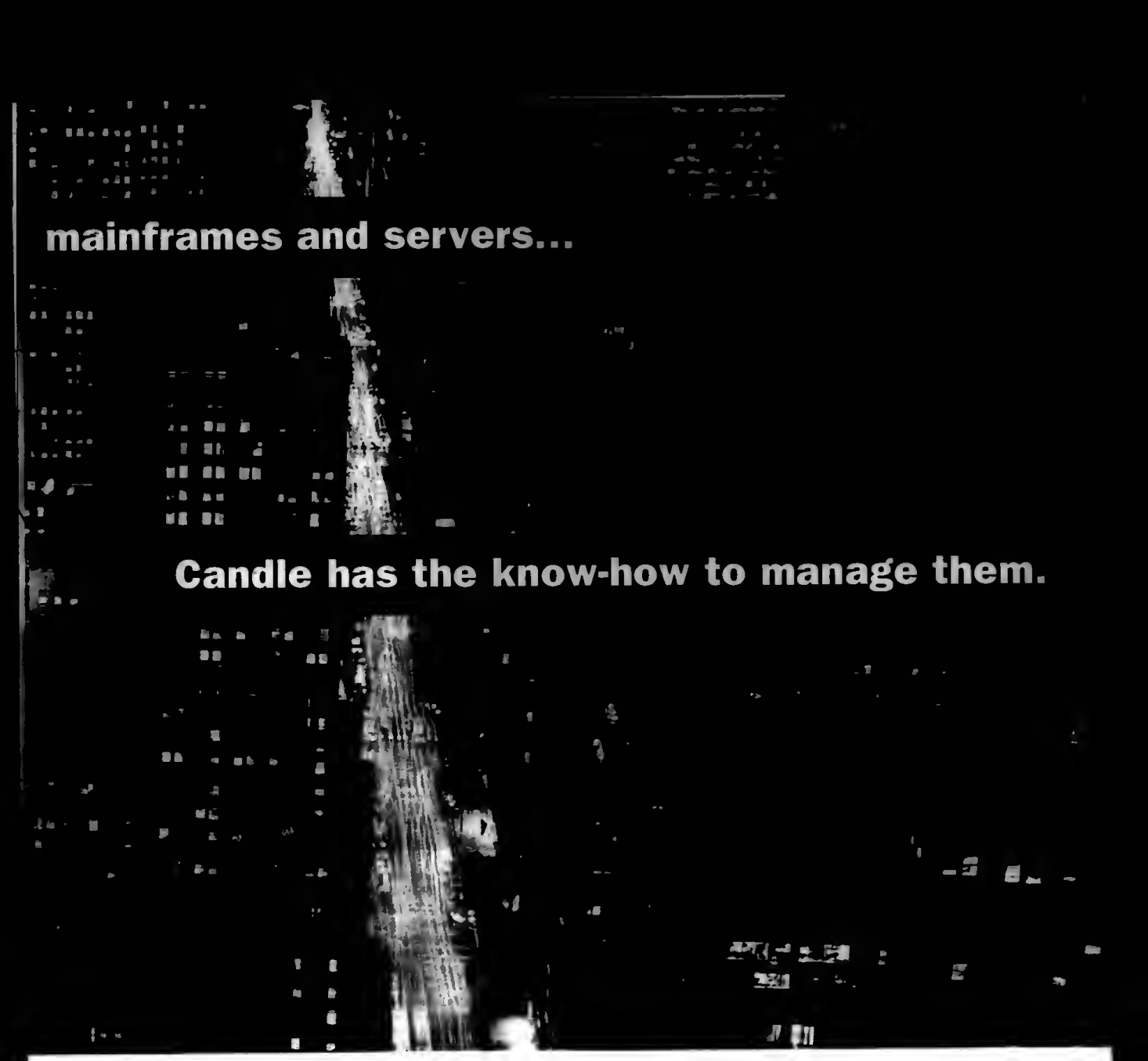
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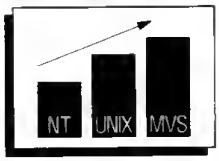
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Marking the path to innovation

How leading technology-based companies use IS to turn innovative strategies into daily practice

WELLSPRINGS OF KNOWLEDGE
By Dorothy Leonard-Barton
Harvard Business School Press, Boston, 1995; $29.95

THE AUTHOR is a professor at Harvard Business School and uses a modified version of the famous case technique to illustrate her main theme — how to sustain sources of innovation in corporations. The cases add spice to the narrative and illustrate her points.

The best one, Chapparal Steel, gives us an excellent walk-through of a company whose competitiveness is a combination of relentless pursuit of the latest technology and enlightened deployment of advanced management practices.



Leonard-Barton's focus is on how technology-based companies such as Chapparal use knowledge and expertise then replenish and renew those qualities over time to turn strategy into daily routine, to go from concept to reality. Her observations apply to any company that needs to transform technology rapidly into new product and process. This ability has four dimensions: physical systems, skills, managerial systems and values.

The key is to create a company where everyone, from chairman to security guard, is encouraged to learn and experiment, and where their resulting expertise is sought out and acted on.

Although the book is useful for any manager, some sections are particularly applicable to IS. Chapter 3, on problem-solving, contains an excellent discussion of how to size and scope a design. Chapter 4 has useful suggestions for getting people to accept new technology. Chapter 5 focuses on requirements definition, including user and developer roles, and has a good review of models and prototypes.

Chapter 6, on external expertise, is useful for firms that regularly employ consultants or researchers. Chapter 7, on learning from the marketplace, should be a must-read for all technology vendors. Only Chapter 8, on transferring knowledge to developing nations, isn't broadly applicable. The book also contains a useful warning: that human minds are the most flexible assets a company has but that those same minds can also become rigid. It's important to allow activities and systems to be creatively destroyed so as to adapt anew.

The next step in step theory

Companies must get leaner and meaner to embrace large-scale change. And IS holds the key.

CREATIVE DESTRUCTION
By Richard L. Nolan & David C. Croson
Harvard Business School Press, Boston, 1995; $29.95.

CREATIVE DESTRUCTION is precisely the theme of Nolan's latest book. Nolan is a co-founder of Nolan, Norton & Co. in Boston and author of a seminal work on the stages of growth in information systems organizations. He is still enamored of stages, but this time the focus is not on maturity but on transforming organizations to compete in the emerging information economy.

The new stages are: downsizing; seeking dynamic balance; developing a market access strategy; becoming customer-driven; developing a market foreclosure strategy; and pursuing a global scope.



Much of this isn't new, and the authors' arguments are long on concept and short on example, which makes for a dull read. But what makes this book useful to IS managers is how they describe IS' key role in either cementing old methods and principles or enabling new ones.

IS can support organizations making incremental (10%) change or enable groundbreaking (10x) change. This distinction, which is used throughout the book, helps clarify the massive changes required to realize the vision.

Nolan has been a longtime advocate of cutting the workforce by 50%. His argument is that such a drastic measure will force an organization to drop its old ways of organizing and operating. In their place, a new set of management principles that emphasize flexibility, worker empowerment and the creation of value.

Unfortunately, the reality is that most firms downsize but leave old processes and measurements intact. The remaining workers have to do more with less, which causes great stress. And what about the overall social impact of a 50% unemployment rate?

Still, it's an interesting vision. Read Chapters 1, 2 and 9. The first two outline the main argument, and the latter discusses management principles essential to the information technology-enabled network organization. Skim the rest of the book and hope your CEO doesn't get a copy.

(Reviewer Leilani Allen is a director at Tenex Consulting, one of whose principals was formerly a principal at Nolan, Norton & Co.)



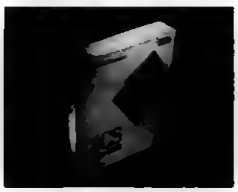
Reviewer Leilani E. Allen is a director at Tenex Consulting in Burlington, Mass.



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Look who



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Executive Track

Woolworth Corp. in New York has announced the appointment of **Maryann M. McGeorge** as vice president of merchandise planning and systems. In the newly created post, McGeorge will be responsible for the design and development of consistent corporatewide merchandise and reporting information processes. She will report to Roger N. Farah, chairman of the board and chief executive officer. Prior to her appointment McGeorge was senior vice president of planning and MIS at Federated Merchandising, the buying and product development unit of Federated Department Stores, Inc. Prior to that, she was divisional vice president of planning/MIS at Rich's/Goldsmith's in Atlanta.

Home Depot, Inc. in Atlanta has announced the appointment of **Ron Griffin** as senior vice president of information systems. Griffin, who was previously vice president of IS, replaces **Andrew McKenna**, who last year was named president of the home improvement retailer's Midwest division.

Simon & Schuster, Inc. in New York has announced the appointment of **Michael Packer** as executive vice president of technology, systems and operations. Packer will be responsible for IS and technology, distribution services, customer service, logistics and transportation throughout the publishing company. He also will spearhead aggressive efforts to integrate a range of new technologies. Prior to his appointment, Packer was president of Micro Modeling Associates, managing director and head of technology at Bankers Trust Co.'s Global Investment banking division and director of the Strategic Information Technology practice at the MAC Group in Cambridge, Mass.



Simon & Schuster's *Michael Packer*

Sales Technologies Inc. in Atlanta has announced the appointment of **Frank Domingos** as vice president of IS and human resources. He will be responsible for maintaining synergy among the company's computing services, data center services, telecommunications, network services, information technology and services and human resources.

Howrey & Simon in Washington has announced the appointment of **John Clark** as director of IS. Prior to his appointment, Clark was deputy assistant secretary of the U.S. Department of State Office of Information Management.

Dime Savings Bank in New York has announced the appointment of **Jack Wagner** as executive vice president and chief information technology officer. Prior to his appointment, Wagner was a senior vice president at the bank.

Marsh & McClennan Cos. in New York has announced the appointment of **Thomas J. Fogarty** as deputy head of technology and process innovation. He will report to Howard C. Green, managing director of technology and process innovation operations. Fogarty will help manage Marsh & McClennan's worldwide IS activities, including new technology initiatives such as the Mpower network, which will link employees, clients and underwriters; the Client/Prospect Management System, and the Global Brokering System.

Prior to his appointment, Fogarty was senior vice president of IS and telecommunications at **The Chase Manhattan Bank NA** in New York. **Craig Goldman**, senior vice president and CIO at Chase Manhattan, will assume Fogarty's responsibilities until a successor is named.

Robert Martin Co. in Elmsford, N.Y., has announced the appointment of **Margaret Van Tassell** as director of MIS. Prior to her appointment, Van Tassell worked as an MIS supervisor at the company.

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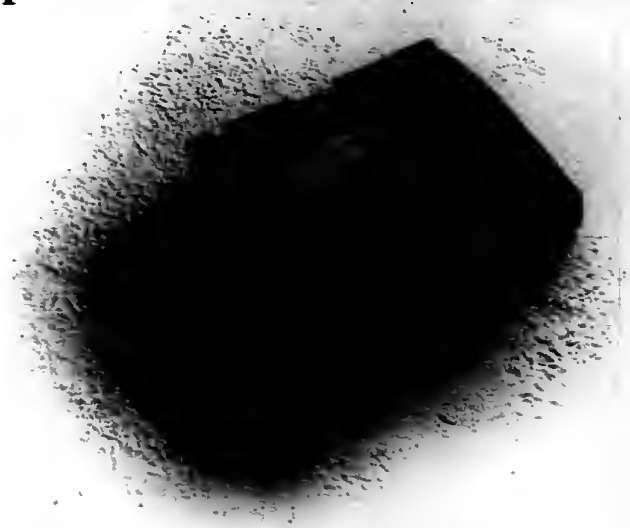
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Calendar

OCT. 23 - NOV. 9

MANAGEMENT

Achieving Rapid Improvement in Product Development. Dearborn, Mich., **Oct. 30** — Topics include: identifying areas in your process that would benefit most from improvements, techniques to identify and tackle the problems, measurement tools and best-of-class product development practices. Also offered Nov. 12 in Rochester, N.Y., and Dec. 13 in Cambridge, Mass. Fees: $895.99 per person, $100 discount each for groups of 3 to 5, $150 discount each for groups of 6 to 11. Contact: Registrar, Management Roundtable, Inc., University Office Park, Waltham, Mass. (800) 338-2223.

Electronic Commerce. San Francisco, **Oct. 30-31** — Topics include: on-line partnerships and alliances, security solutions for electronic payment systems, innovative on-line strategies for banks and merchants, the role of on-line advertising, designing and implementing the perfect on-line catalog, and legal and regulatory issues. Fee: $1,295. Contact: Customer Service-AIC Conferences, Inc., New York, N.Y. (212) 952-1899.

Software: Issues, Contracts, Negotiations. Short Hills, N.J., **Oct. 30-31** — Topics include: software asset management and protection, maintenance strategies, dealing with computer associates and other suppliers, and software escrows. Contact: International Computer Negotiations, Inc., Winter Park, Fla. (407) 740-2070.

Internet Executive Retreat. Woodstock, Vt., **Oct. 30-Nov. 1** — Focus will be on Internet resources specifically relevant to your company, overview of competitor and strategic partner presence on the Internet, navigation skills, the ability to perform basic Internet functions, strategic implications, current uses and future development, and potential impact on the company and its employees. Contact: The Montague Institute, Montague, Mass. (413) 367-0245.

Managing Privacy Revolution '95. Washington, **Oct. 31-Nov. 1** — Conference for managers in consumer credit services, corporate and government consumer affairs, banking, securities, credit cards, direct marketing, telecommunications, health care, medical records, insurance, human resources, cable television and on-line services and information. Fee: $695 ($645 for *Privacy & American Business* subscribers). Contact: Center for Social and Legal Research, Hackensack, N.J. (210) 996-1154.

Integrating Product Development Throughout the Value Chain. Orlando, Fla., **Nov. 5-8** — Topics include: cross-organizational resources for high-impact results, adding value early in the chain and forming true business partnerships. Keynotes by Steven Wheelright of the Harvard Business School and co-author of *Revolutionizing Product Development: Quantum Leaps in Speed, Efficiency and Quality* and Neil Standahl, vice president and general manager of Boeing Commercial Airplane Group. Contact: Management Roundtable, Waltham, Mass. (800) 338-2223.

Computer Network & Information Security. Washington, **Nov. 6-8** — Topics include: security involvement with employee terminations, information security career paths, creating an ethical computing environment, Internet security, electronic mail and benchmarking your security. Fee: $197. Contact: Computer Security Institute, San Francisco, Calif. (415) 905-2626.

Leasing Negotiations Workshop. Short Hills, N.J., **Nov. 6-8** — Topics include: prioritizing computer equipment lease objectives, developing a master lease, understanding lease accounting, advanced lease structuring, income tax considerations, using requests for proposals to gain power and purchase vs. lease options. Contact: Computer Negotiations International, Winter Park, Fla. (407) 740-0700.

Enterprise Expo 1995. Chicago, **Nov. 6-9** — Theme: "Partnering to Implement Enterprise-wide Solutions." Focus on information systems management, database and application environments, networking and interoperability, data center operations and operating system platforms. Contact: Enterprise Expo, Dallas, Texas (214) 669-9000.

INDUSTRIES

Understanding Healthcare Informatics Standards. New Orleans, **Oct. 29** — Topics include: confidentiality and security in health care, computer-based patient records, health information networks, transcription, documentation and health care modeling and framework. Contact: ASTM, Philadelphia, Pa., fax (215) 299-2630.

International Regulators Workshop. New York, **Oct. 30-Nov. 2** — Sponsored by The Columbia Institute for Tele-Information, Columbia University. Keynote by Reed Hundt, chairman of the Federal Communications Commission. Contact: Alex Wolfson, assistant director of the Columbia Institute for Tele-Information, New York (212) 854-4222.

USER GROUPS

Open Media Framework (OMF) Interchange International Developers Conference. Colorado Springs, **Oct. 23-26** — Focus on digital postproduction process and how customers can effectively interchange projects by using OMF-compatible products and applications. Contact: Ariana Wallack, Schwartz Communications, Inc., Wellesley, Mass. (617) 431-0770.

General Magic Developers Conference. San Jose, Calif., **Oct. 29-31** — An in-depth look at Magic Cap and Telescript platforms and related market opportunities. Fee: $395 before Oct. 13, $495 after that date. Contact: General Magic, Sunnyvale, Calif. (800) 468-4342, ext. 4273.

ABUI Fall '95 Conference & Exposition. San Jose, Calif., **Oct. 29-Nov. 1** — Theme: "The New Virtual Enterprise." Targeted at network managers, administrators, support staff and decision-makers. Keynote by Michael Rothman, program director of global networking strategies at Meta Group, Inc. Contact: Association of Banyan Users International, Chicago, Ill. (312) 644-6610.

Comptron Users Conference. Florham Park, N.J., **Oct. 29-Nov. 1** — Keynotes by George Schussel of DCI, Barry Wilderman of Meta Group, Inc. and Brian Sommer of Andersen Consulting. Contact: Comptron Software, Inc., Rutherford, N.J. (201) 935-3400.

Comshare North America Users Conference. Nashville, **Oct. 29-Nov. 1** — Theme: "Ideas in Motion." Keynote by Don Tapscott, co-author of *Paradigm Shift: The New Promise of Information Technology*. Contact: Comshare, Inc., Ann Arbor, Mich. (800) 489-7551.

TECHNOLOGIES

Commerce at Light Speed (CALS) Expo International '95. Long Beach, Calif., **Oct. 23-26** — Theme: "Changing the Future." Focus on developments and trends in electronic commerce technologies, processes and standards used to integrate multicompany and multinational enterprises. Keynote by Norihiko Ishiguro, director of information at the Computer and Communications Policy Office of Japan's Ministry of International Trade and Industry. Fees: industry, $695; government, $575. Contact: CALS Expo International, Irvine, Calif. (714) 855-1419.

Second Annual Strategic Multimedia Conference. San Francisco, **Oct. 23-24** — Focus on "digital convergence" and its impact on multimedia, market size and distribution; product opportunities for hardware, software, systems and services; and emerging legal issues that face developers, publishers and distributors of multimedia products. Contact: Frost & Sullivan, New York, N.Y. (212) 964-7000.

Internet World '95. Boston, **Oct. 30-Nov. 2** — Keynotes by Eric Schmidt, chief technology officer and corporate executive officer of Sun Microsystems, Inc.; Martin Schoffstall, senior vice president and chief technical officer of PSINet, Inc.; and Paul Gudouls, chief executive officer of BBN Planet. Fee: $695 before Oct. 17, $795 after that date. Contact: Mecklermedia Conference Management, Westport, Conn. (800) 632-5537.

Technology Forum '95. New York, **Oct. 31** — Keynote: "Building the Infrastructure: Computer Strategies for the Millennium" by Bill Laberis, editor in chief of *Computerworld*. Sessions include: "Microsoft's Success: What It Means for Our Industry?" "Managing Upgrade Costs in an Ever-changing Environment" and "Corporate Challenge: Platform Choices for Client/Server." Fees: members $100, nonmembers $250. Contact: Priscilla Tate, Technology Managers Forum, New York, N.Y. (212) 787-1122.

Wireless World Expo '95. San Francisco, **Nov. 7-9** — Topics include: "Customer Care: The Great Differentiator," shared network techniques, wireless LANs, bridges and links, wireless location strategies and reaching the mass market. Fee: $395. Contact: E.J. Krause & Associates, Inc., Bethesda, Md. (301) 986-7800.

Calendar announcements should be submitted at least six weeks prior to the event and include the title of the event, dates, location, theme or focus, keynote or major speakers, principal topics and a contact person, organization and phone number.

SEND ANNOUNCEMENTS TO:

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HI
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digital

In Depth

CREATING WEB PAGES

BY DAVE TAYLOR

I'm going to take you on a journey of Web sites that I think represent some of the good and bad things happening in World Wide Web page design these days.

This is an arbitrary listing of sites. These pages weren't chosen because I've deemed them good or bad based on some scientific formula; rather, I picked them based on the general lessons they can offer companies thinking about creating Web pages. It is a highly subjective grouping.

Please keep in mind an important point: What you see when you visit these pages may differ from what you see here, depending on which viewer you use.

Taylor, president of Intuitive Systems, has developed more than 750 Web pages, most of which he thinks are pretty cool. He's the author of *Creating Cool Web Pages with HTML* (IDG Books) and co-author of *The Internet Business Guide* (Sams.net, 1995). He's at taylor@intuitive.com, or visit http://www/intuitive.com/.

Yesterland

This site, billed as a "theme park on the Web," features discontinued Disneyland attractions.

There are a lot of good things happening on this page. While there are several background colors, the page is focused more on content and less on flash. Unlike sites that make sense only if you wait and get all the graphics, the custom graphics here are nice add-ons rather than essential to navigating the site. The graphics are also small and use the minimal color palette needed to look attractive.

Most important, this site is fun, lively and worth exploring.



http://www.mcs.net/~werner/yester.html

Not only do you want the page to be useful, but you want users to feel some gut-level affinity for it. That keeps them coming back. Touches such as this mock signature help personalize a Web page and make users feel like they're sharing something with the author rather than reading a billboard.

Also note that this graphic needs only 1 bit (black or transparent), so the entire graphics file is only 237 bytes. Smaller = faster transfers = a faster page = happy users.

WebCrawler

Web searching tool



http://webcrawler.com/

Here's an attractive, comic-like graphic that makes this page enticing. The simplicity of design and search is fabulous. And the graphic is minimized to ensure fast transmission, you may not realize it by looking at the "Surfer Spidey" picture, but it's been squashed into only 16 colors rather than presented as a 256-color image.

The use of forms is excellent here. Instead of puzzling computer jargon, the page has taken the old Mad Lib idea and turned it into an essential part of the interface. Users can fine-tune the sentence to reflect the type of search they want, click "Search," and they're off.



Search for "Computerworld"

The results of a search on WebCrawler are disappointing, however, and represent some of the worst possible Web page designs. There's no fun graphic or icon (Where did Spidey go? A lot of effort was put into designing a fun mascot, and he vanishes when you leave the opening page.). The output results are baffling at best. Why are these particular items matches to our search? What do the mystery numbers in the left column mean? Why are some entries in italics?

Why aren't there any navigational buttons on this page? How do I decide to do another search from this point?

DECISION SUPPORT SYSTEMS
ON TARGET WITH CHANGING NEEDS

THE ANSWER FOR TODAY'S DATA-RICH
YET INFORMATION-POOR ORGANIZATIONS

MANAGEMENT REPORT

NEWS TRENDS OPINIONS AND IDEAS FOR INFORMATION MANAGERS

Creating a Model for Informed Decision Making *(You'll Find the Plans in Our Free Applications Development Guide)*

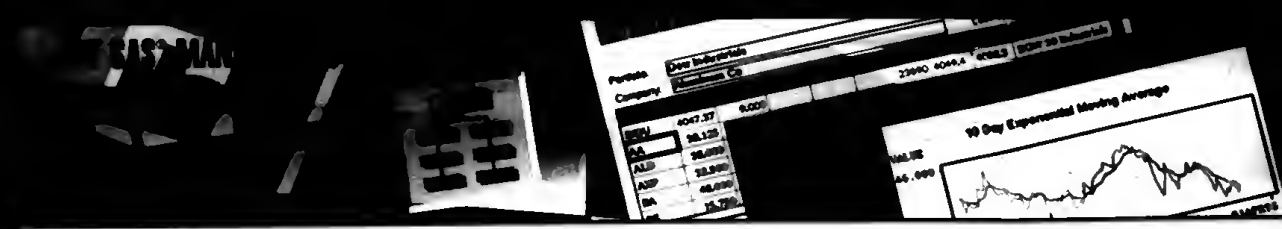
Transaction-oriented applications are firmly established in most organizations. But full-scale enterprise information delivery requires another model. Empowering today's decision makers with the right information, at the right time, is a challenge few tools can meet.

In this MANAGEMENT REPORT, SAS Institute's Mark Moorman—Program Manager, Applications Development—examines tools for information delivery based on such success factors as *scalability*, *portability*, and *applications partitioning*. And he finds there's only one logical choice for meeting the information needs of today's knowledge workers.



"Delivering applications has traditionally been a matter of specifics, a specific high-volume activity such as order entry, a certain hardware platform, a limited applications life cycle," says Moorman. "More and more companies are expanding their expectations beyond operational applications to encompass enterprise-wide information delivery applications. And they're reaping tremendous rewards—from more cost-effective use of system resources to more informed decision makers."

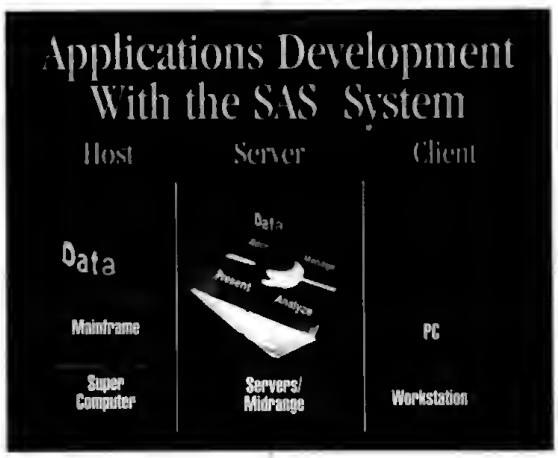
continued on next page



Getting Data Into the System Shouldn't Be an End in Itself

According to Moorman, traditional operational (OLTP) applications involve automating redundant processes, such as updating large databases concurrently while maintaining the integrity of the data. Because the tasks are done over and over—entering new orders, for instance—these applications must be easy to use while protecting the repository as new data are continually added. "From a developer's standpoint, much time and energy is spent in designing the graphical user interface for data entry, and on effective throughput to keep the data flowing," says Moorman.

While getting data into the system is critical, so is the **information** you get out of the data—especially in terms of moving the organization forward. "Applications delivery shouldn't exist in a vacuum," says Moorman. "It should provide a framework for reaping the full rewards of data warehousing and business intelligence applications, allowing your knowledge workers at every level of decision making to access just the right data, and analyze it in just the right way, to arrive at the right business decisions."



That's why the move is on to deliver open-ended information delivery applications—with heavy emphasis on data query, analysis, visualization, and presentation.

Because transaction-oriented applications center on single tasks and maintaining data integrity, they're usually built using a life cycle design. There's a stage of investigation, followed by design and analysis. Then comes development, which is followed by a prolonged implementation period and continuous system management," explains Moorman.

Taking an Iterative Approach Keeps Decision Support Systems on Target with Changing Needs

Instead of a life-cycle design, enterprise-wide decision support systems should rely on an **iterative** approach in both their design and deployment. "Taking an iterative approach means prototyping applications quickly and delivering them without a lot of fanfare," says Moorman.

"Because of its iterative design, the application can then be continually reshaped in response to client needs. For instance, a client might ask to add a button for graphing last month's sales. Another might want a button for forecasting next year's profits. Or maybe a whole new product line comes into play. The point is that the business needs never stand still," Moorman explains.

Having All th Makes Building Faster an

While transaction-oriented applicat **input**, information delivery applica duty information **output**. "That me action to enable users to actually ir says Moorman.

"A decision support syst any source and in any format, acro This is followed by an analytical lay run applications can be applied di ranking, forecasting, and so forth interface (GUI), which presents all a palette for asking questions abou and requesting any kind of report

Any part of the applicati the hardware platforms in the ente resides on a host main PC, and some of the ap UNIX® server," Moorm allows an application designed for easily shared and modified by any each application be easily scaled u data or users."

Moorman advises organ decision support applications to lo ability (so that applications adapt t tion)...portability (so that data and in a client/server environment)...a that portions of an application can

e Right Tools Any Application d Easier

ions are built for heavy-duty data tions are geared toward heavy- eans looking beyond screen inter- teract with your enterprise data."

em starts with accessing data, from ss multiple hardware platforms er, where hundreds of ready-to- rectly to the data for trending, Then comes the graphical user these choices while providing t the data, visualizing the data, or graph."

on should be executable across all rprise. "It may be that the data frame while the GUI is on a client pplication logic is performed on a an says. "An enterprise approach a single user or department to be other department, so it's vital that pward to accommodate more

izations deploying enterprise-wide ok for software that provides scal- o a growing user or data popula- applications can be easily shared nd applications partitioning (so be moved directly to the data).



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THE IT PERSPECTIVE
MARK MOORM

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"solutions" that can't move you

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performance for executing ent
the SAS System brings you...

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scalability is critical. Smaller, d
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more platforms.

In addition, most co
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independent. This frees up IS
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applications across systems wi

Applications Partitioning

Sometimes it makes more sen
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ring large amounts of data ove
this capability into our softwar
traffic and effectively utilize all



AN

Decision Support Answer for Today's Information-Poor, nizations

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erprise-wide applications. You'll find

erprise-wide client/server applications,
lient-based development tools can't
d, true enterprise-strength applications,
nall groups of users, can be easily
nents of more users, more data, or

mpanies today have heterogeneous
h require both application and object
endor Architecture™ makes the SAS
ou build with it, virtually hardware
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se for an application to execute on the
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Interoperability



Mark Moorman
Program Manager, Applications Development

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TO DIE FOR

TradeWave Galaxy

An on-line directory of information and spots to visit on the Web



http://www.elnet.net/

This site is a great place to look for information on-line, yielding valuable and accurate information. Overall, the site was designed well and is fast to navigate, but it's not vastly cool.

One thing that bugs me is that it's not until you're far into the page that you get to any real information or topics — between the rather tired graphic (why not have the word "Galaxy" superimposed on the picture?), promotional spots and advertising graphic.

Once you get to the topic index, however, the organization is flawless and invaluable — even if it looks a little dull.



http://www.elnet.net/

The navigational spots appear at the top and bottom of every page in TradeWave's Galaxy site. It's nice for users to know that they can't get too lost when browsing through the extensive database of links to other places on the Internet.



http://www.elnet.net/galaxy/Leisure-and-Recreation/Film-and-Video.html

To say this is low-key is to understate how dull this page appears at first glance. The graphic is a postage stamp; even the name of this directory is subtle. But it has some of the hallmarks of what makes a good site. the information is categorized meaningfully, presented clearly and has no typographical errors or dead links.

It's great to include a context-sensitive "add me" button for people who want to include their own information or suggest new spots to the person who maintains the list of hot links for this page. The way Galaxy phrases its "add me" button makes it clear that the entire TradeWave site is interactive and user contributions are essential to its growth and accuracy.

THE NUTS AND BOLTS

To create a cool Web page, you need information, a keyboard, knowledge of Hypertext Markup Language and a lot of respect for the time and interests of your users. Nice graphics are helpful, but not vital, to a useful Web page. What counts is good layout and design, and that's not something you can find in a box.

If you want to create your own graphics, try TypeStyler from Broderbund Software, Inc. in Novato, Calif. For typographical effects, try Photoshop from Adobe Systems, Inc. in Mountain View, Calif. And to manipulate photographic images, try Lview Pro or GraphicConverter. Both are shareware and can be used to generate graphics interchange formats and fine-tune images. Keep in mind that each 2K bytes of graphic size is about one second of download time for typical dial-up use.

To create a page on the Web, you need a server, some Web server software and a full-time network connection to get started. There are great servers for PCs, Macintoshes and Unix machines on the Web. Free and commercial servers are available.

The easier solution, if you want to dabble with the Web and Internet before investing thousands of dollars, is to rent space on a server someone else runs and maintains and either pay them to design your Web pages, learn how to do it yourself or find a third party to help.

Your local computer user group should be a great place to start, or you can ask just about any Generation-X'er.

Web pages to die for, *page 109*

Calling All IS Pros: Web Page Contest

Computerworld is soliciting your vote for the best business home page. Please give us the address of the page and a description of why it's the best in 100 words or fewer. A panel of *Computerworld* editors and Internet experts will pick the best pages based on content, graphical impact and use of links.

The person(s) who nominates the winning entries will receive Quarterdeck's InternetSuite (suggested retail price of $59.95) and the top pages will be showcased with your nomination in *Computerworld* early next year.

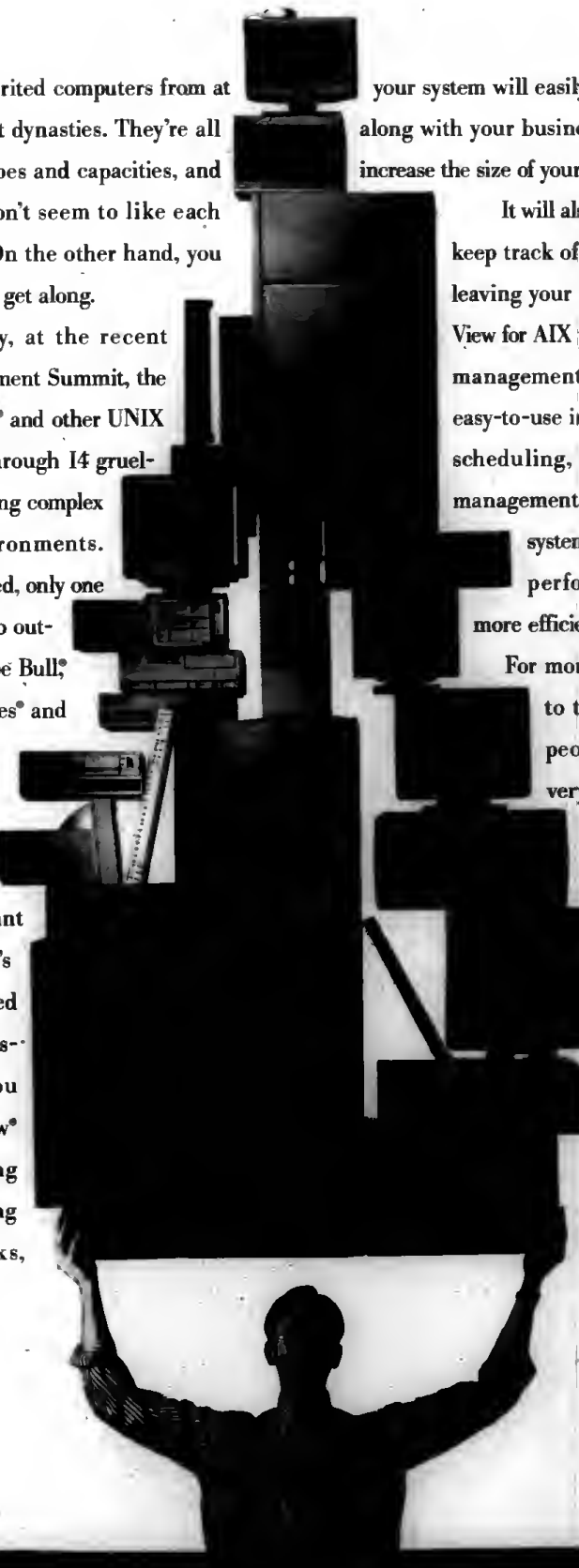
For your nomination to be valid, you must be an information systems professional — no vendors or consultants, please. You also must have no affiliation with the page you nominate or the company behind it. Please include your name, title, organization and a phone number where you can be reached.

You may nominate *one* page. Please send your nomination electronically to contest@cw.com or fax it to Lory Dix at (508) 875-8931 by Monday, Nov. 20.

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23. Dir./Mgr. Sys. Development, Sys. Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Mgt.
60. Sys. Integrators/VARs/Consulting Mgt.

CORPORATE MANAGEMENT
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12. Vice President, Asst. VP
13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply)

Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
App. Development Products ❑ Yes ❑ No
Networking Products ❑ Yes ❑ No

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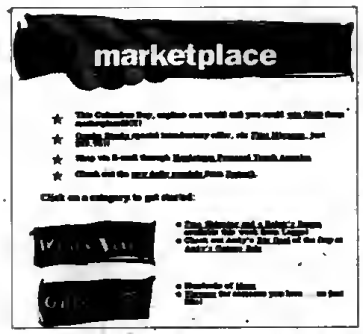
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CREATING WEB PAGES TO DIE FOR

Continued from page 105

MCI Marketplace

Shopping site on the Web

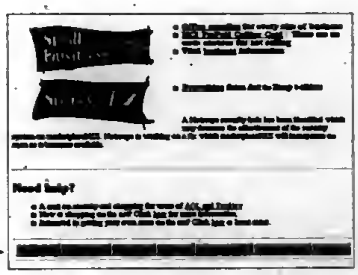


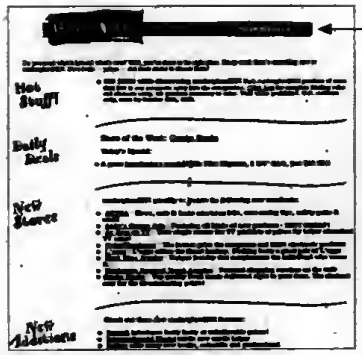
http://www.internetmci.com/marketplace/

I think this is a beautiful page. It's clear that what's really cool about this page is that MCI found a graphical artist who has been having some serious fun with the artwork. The graphics are bold, attractive and clear.

But the layout is overwhelming and ultimately too busy for my taste. On my smaller screen, the information is completely off the right side. Design strategies should take into account various window widths, different machines and browsers.

It's low-key and doesn't fit into the splashy style of the rest of this page, but I really like the ease and readability of the navigational bar on this page.

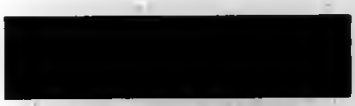




http://www.internetmci.com/marketplace/html/wnew.html

This page needs a date stamp. When was this "What's New" page last updated? Is it hours, days or weeks old?

The site does a good job, however, of branding the pages as you move through them. It prevents users from getting lost; they always know they're visiting a single site and not wandering the Web. They'll like you for that.



I clicked on "directories" in the button strip at the bottom of the "What's New" page and look what I got. A dead link — tres uncool and doubly so for a site where companies are paying money to be involved.

HINTS TO SAVE YOU HEADACHES

GRAPHICS: Screen real estate is a premium on Web pages, and different systems not only connect to the 'net at different speeds but have dramatically different displays. What looks perfect on one machine will look very different on another — guaranteed.

One real gotcha: Screen resolution varies from computer to computer, so an image that measures 1⅛ inches high on a 100 dot/in. graphics workstation might blossom to 2⅛ or even 3 inches high on a lower-resolution PC.

If someone has only a 13-in. screen, a tiny top banner will take almost half of the display. Small graphics are better than large ones, and minimizing the number of colors in a graphic is a fast and simple way to shrink things down. Some companies learn this the hard way. Keep users in mind.

ORGANIZATION: I may be a lone voice, but I don't really enjoy surfing for information. I believe strongly that those sites offering the greatest value to visitors are those that make it immediately obvious what information is available, how to get it and how to update the information if you feel it's in error or have something of your own to add.

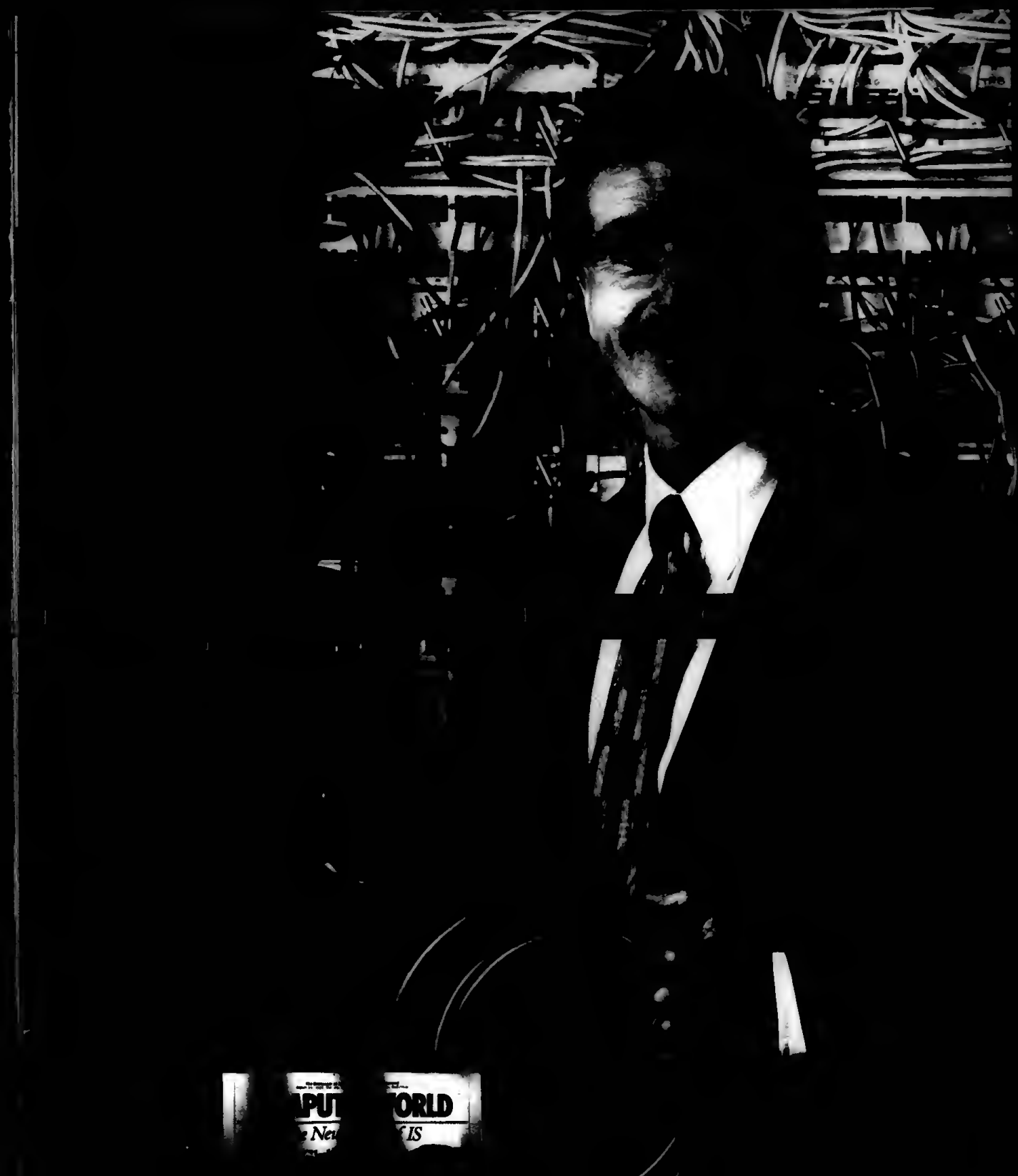
DON'T DARE DO THIS ON YOUR PAGE

- Don't crowd images.
- Don't have a stylistically different icon for every bullet.
- Don't have too much information on a single page.
- Don't forget a time stamp.
- Don't make something look like a button but not work like a button.
- Don't steal someone else's graphics.
- Don't repeat the same link with different names.
- No dead-end links.
- Don't leave the important stuff for the bottom — someone may not make it down that far.
- Don't forget to tell people how big files are before they download them.
- Don't forget a webmaster reference.

— From http://ee.stanford.edu/soe/www/donts.html

Web pages to die for, *page 112*




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CREATING WEB PAGES TO DIE FOR

Continued from page 109

San Jose Mercury News Interactive

San Jose Mercury News' on-line newspaper site



http://www.sjmercury.com/main.htm

While the information at this site is very cool — imagine being able to get a decade's worth of newspaper clippings on-line — the design of the site isn't so cool. The size of the opening graphic, for example, is too large. It conveys little information, so why should I have to wait for a 97K-byte graphic to be downloaded?

The buttons are rather dull. Worse, the buttons are two colors, but the graphics files are 256 colors, so users pay for empty download time while the page is building itself — uncool to the extreme.

The Mercury site is subscription-based but cleverly enables net surfers to get quite a bit of information (story summaries, headlines and so on) free. The ability to browse gives users a feel for the site and, hopefully, makes them want to subscribe.



http://www.sjmercury.com/home.htm

The heart of the San Jose Mercury Center is the virtual front page of the award-winning San Francisco-area newspaper. The opening graphic is still too big, but this page is visually interesting. And the style of teasing the top story with a picture and letting people click on "Full Story" to learn more is terrific.

"Hyperlinks" is a great navigational addition that users love; why isn't a shortcut of this nature available on the front page? A cool Web site lets users get the information quickly and easily.

Again, more great navigational cues that let users flip around this Web site and find what they want fast.

Notice the slogan and teaser tied to the advertisement. A smart approach to encourage people to learn more about that vendor.



http://www.sjmercury.com/today.htm

Here's a dull approach to a very interesting page. The information should stand out, while the categories should be more subtle.

RESOURCES NOT TO BE MISSED

RELATED READING

How to Set Up and Maintain a World Wide Web Site
by Lincoln D. Stein
(Corporate and Professional Publishing Group, 1995)

Looking Good in Print
by Roger Parker
(Ventana, 1993)

Macintosh Interface Guidelines
by Apple Computer, Inc.
(Addison-Wesley, 1993)

Teach Yourself HTML in a Week
by Laura Lemay
(Sams Publishing, 1994)

Tog on Interface
by Bruce Tognazzini
(Addison-Wesley, 1994)

The Web Page Design Cookbook
by William Horton, et al
(John Wiley & Sons, 1995)

A comprehensive list of current books on Web page design can be found at http://www.stars.com/Vlib/Misc/Books.html

WHAT'S ON-LINE

Guides for writing HTML documents
http://union.ncsa.uiuc.edu:80/HyperNews/get/www/html/guides.html

The home page for Point Communications Corp., an independent home page rating agency. This is a free service that rates and reviews sites on the Web.
http://www.pointcom.com/

Links for help building a home page
http://gladstone.uoregon.edu/~kdouglas/pagehelp.html

How much should go on a single Web page?
http://ee.stanford.edu/eecns/www/answer5.html

For information on how to become a webmaster, turn to the Computer Careers section in this week issue.



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Computer Careers

Turn to the Web, learn the Web

You can pick up development skills by tuning in to the Internet



By Arnon Davidovici

So, you want to be a Web developer. You may start by learning HTML, but there is much more than that involved in carving out a career built around the World Wide Web.

It may be called Hypertext Markup Language, but HTML isn't a programming language. In fact, it doesn't even require knowledge of programming concepts. HTML is a set of tags that format text (for example, text for bold), link to other pages (text to link to page5.html) and include images, sounds or videos (<img src="image5.gif">).

Your first step toward learning HTML should be to read some of the many books and on-line resources. One book I suggest is *HTML Sourcebook* by Ian S. Graham, published by John Wiley & Son, Inc. Also check out *The Web Publisher's Construction Kit* by David Fox and Troy Downing, published by The Waite Group. A couple of very good on-line resources are The Bare Bones Guide to HTML (http://www.access.digex.net/werbach/barebone.html), a complete listing of HTML tags, and Learning HTML (http://www.bev.net/computer/htmlhelp/), a list of links to HTML style guides, beginners guides and tutorials. You should also read the HTML specifications (http://www.w3.org/hypertext/WWW/MarkUp/).

The method that will help you most, though, is exploring the Web. If it isn't obvious to you how a particular page was created, view the source and figure it out.

There are actually three main areas of Web development: HTML, Common Gateway Interface (CGI) and graphic art. HTML is easy to learn, and anyone with an eye for page layout can use it.

If possible, don't market yourself with HTML as your only Web skill. CGI programmers and graphic artists have valuable extra skills.

CGI is the programming background to forms, search mechanisms and any other systems interaction. Without knowledge of CGI scripts, users can create nice sites but can't automate the tasks that could make dealings between companies and clients easier.

Pages I would suggest to increase your knowledge of CGI scripting are Learn to Write CGI-Forms (http://www.catt.ncsu.edu/users/bex/www/tutor/), CGI: Common Gateway Interface (http://hoohoo.ncsa.uiuc.edu/cgi/intro.html) and The CGI Programmer's Reference (http://www.best.com/hedlund/cgi-faq/).

If you don't already know how to program, I suggest learning Perl (http://gopher.metronet.com:70/1/perlinfo). *Teach Yourself Perl in 21 Days* by David Till, published by Sams Publishing, is a good starting point.

Shareware can help

If you explore the Web, you will notice that many companies have custom logos, banners and other graphics on their pages. You can improve your knowledge of graphic art by getting some of the numerous shareware image manipulation programs off the usual archives and playing with them.

There are more skills you can add to your Web development arsenal, such as image maps (http://www.yahoo.com/Computers_and_Internet/Internet/World_Wide_Web/Programming/Imagemaps/) and VRML (http://vrml.wired.com/).

However, the most important skills are those involving customer relations and creativity.

You will have to ferret out all the information your clients can use, guide them through what they want in their site and sometimes tell them to go back and think it through further. You will also receive calls from furious customers who can't access their page or can't do something they wanted to do on their page. You will have to respond to complaints quickly and efficiently or direct them to someone who can take care of their problems.

Experience and the people around you are the best teachers in the customer relations arena. To increase your creative skills, experience is a great teacher, but searching the Web to see what other people have done also helps.

As you develop the skills necessary to be a Web developer, I would also suggest you join the HTML Writer's Guild (http://www.mindspring.com/guild/).

The guild has nearly 2,000 members interested in Web development, from masters who develop full time to novices who just want to know a little more. Once you join, you can access all of the resources the guild provides.

One thing to keep in mind is that if you become a Web developer, you will get to do as a profession what almost everyone else gets to do only for fun on the side. ■

For more information on Web page design, see In Depth, page 104.

davidovici develops and programs Web sites for Internet Marketing Partners, Inc. in Dallas (http://www.netbiz.com/imp)

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Win 95 means a new way of doing business

The hot operating system calls for knowledge of objects and APIs

By Steve Alexander

Now that Microsoft Corp.'s Windows 95 has arrived, software developers who want to advance their careers will concentrate on its object-oriented programming and application programming interface (API) features, developers and other industry experts say.

The key to working with Windows 95 is Microsoft's OLE, so experts advise information systems professionals to get up to speed on the application linking technology.

"Windows 95, more than previous Windows systems, is built around Object Linking and Embedding technology. Knowing the ins and outs of OLE is critical," says Jerry Barber, director of technology integration at Adobe Systems, Inc., a Mountain View, Calif., developer of electronic document software. "Once you support OLE in Windows 95, different applications work together much better."

OLE is a key technology for Windows 95 because it permits seamless integration of applications, says Steve Brozosky, director of technology planning at The Vantive Corp., a Santa Clara, Calif., firm that creates Windows applications for corporate sales, support and help desks.

"You have to be very familiar with OLE because its APIs are used for all the Windows 95 integration," Brozosky says. "OLE automation lets you control other applications or have your application controlled."

Gene Wang, executive vice president for applications and development tools at Symantec Corp., a Cupertino, Calif., creator of development tools, sees OLE as "a fundamental enabling technology" for Windows 95. In a real-estate business, for example, spreadsheet, multiple listing service and movie player applications could be linked by OLE's automation features.

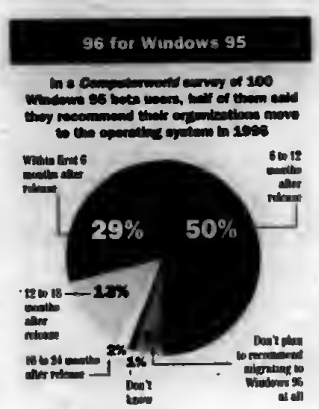
Chris Le Tocq, principal analyst at SoftTracks Software Research in Los Altos, Calif., says that while Windows 95 developers could live without OLE, they wouldn't want to. "In terms of the functionality that users expect to see in Windows 95 applications, OLE has become more important," he says.

Some other features of Windows 95 also will be important to learn, the experts say.

Plug and play. The Windows 95 "plug and play" feature will be important to learn because it requires applications to look for messages about hardware configuration changes, Barber says. "Your application has to be able to receive that message and react to it accordingly," he says.

Multitasking. Developers also need to familiarize themselves with 32-bit multitasking in Windows 95. "You can create a separate process, or thread, that lets you invoke procedures and then continue on with other pieces of code. This has been around for a while in the Unix world, but to do this in Windows 95, you must become familiar with Microsoft's threads processing in 32-bit," Brozosky says.

Bits and bytes. Windows 95 developers have to consider how long they can continue developing 16-bit code for Windows 3.1. "Software developers are caught in the middle. They must write code for two systems, 16- and 32-bit, or choose 32-bit only," Le Tocq says.



Whether it is urgent that developers get on the Windows 95 bandwagon depends on their target markets, Le Tocq says. He predicts that more than half of all Windows 95 shipments this year will go to consumers, and most of the rest will go to smaller businesses. Only 4% of Windows 95 shipments this year will go to corporations with 1,000 or more employees, Le Tocq says. But by the end of 1997, most of the corporate world will have converted to Windows 95, he says.

LANs. Managers in charge of software developers also will need to learn a few things about Windows 95, says Mike Gilpin, vice president of application development tools at Intersolv, Inc., a Rockville, Md., firm that writes multiplatform development tools. For example, they must make sure that Windows 95 is compatible with their company LANs.

"When I first installed Windows 95, I was using Novell's Virtual Loadable Module, a 16-bit shell for Windows 3.1," Gilpin says. "I found it didn't work as effectively as the new 32-bit shell that came bundled with Windows 95 for use with Novell NetWare. On the other hand, there were functional limitations in the Microsoft shell. I had to tell the network administrator to make some changes for me just so I could print documents."

The Internet. In addition to learning new skills to prepare for Windows 95, Barber says smart programmers also will be ready to shift gears if Internet programming turns out to be more popular than Windows 95 development in the months ahead. "It would be a pitfall for developers if they invested a lot of time on the details of Windows 95 and then found out that the demand for talent was more in the Internet, where applications don't care what operating system they run on," Barber says. ■

Alexander is a freelance writer in Minneapolis.

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Winter is on its way . . . THINK FLORIDA

By Leslie Goff

Hasn't everyone thought about moving to Florida at one point or another? When you're a kid, you want to live in Orlando so you can go to Disney World every day. When you're in college, you want to live in Daytona Beach. When you're just about to join the AARP, it crosses your mind to retire to southern Florida. And when winter is blowing in from all corners, everyone thinks of moving to the warm, white-sand beaches of Florida's coasts.

"We advertised job openings on the Internet last year, right in the dead of winter — 'Come to sunny Florida' — and we got a lot of interesting responses," says Alan Fawcett, manager of corporate systems development at Darden Restaurants, Inc. in Orlando. The company owns Red Lobster and other restaurant chains.



Florida's Labor Department estimates employers in Miami and throughout the state will average more than 1,000 openings a year for systems analysts alone

Forecast sunny

The nation's fourth-largest state merits serious consideration from information systems professionals who dream of relocating this winter. IS managers and staffing specialists across the state report they are aggressively seeking client/server and Cobol development specialists. Moreover, statewide employment projections through 2005 are downright sunny: The state's Labor Department estimates Florida employers will average more than 1,000 openings a year for systems analysts alone.

Tourism is still Florida's dominant industry, but the state's Top 50 employers include health care, entertainment, banking/financial services, IS contracting services, transportation, retail, utilities and insurance firms.

Overall, Florida's 6.3% unemployment rate compares favorably to the national average. The average price for a house is $10,000 to $30,000 lower than the national average, according to state government statistics. And residents don't pay a state income tax.

South Florida, which includes Miami and Fort Lauderdale, leads the state in opportunities for IS professionals who are relocating from outside the area.

"This area went through gut-wrenching changes over the last few years," explains Thomas Loane, vice president of information services at Alamo Rent A Car, Inc. in Fort Lauderdale. "A number of banks disappeared, as well as a couple of major companies. A lot of companies moved their data centers out of the area. So a lot of people left the area because the opportunities had dried up. Now the growth is back and the people aren't here," Loane says.

"It isn't hard to find a body, but it's hard to find the quality of individual we're looking for," says Robert Tabb, a divisional chief information officer and vice president of IS at Ryder System, Inc. in Miami.

He says he has recruited aggressively from outside the state for "specific skills and the caliber of individual I'm looking for."

Tabb increased his staff by 20% this year, including full-time and contract employees, because Ryder undertook a major re-engineering effort. "We have had to significantly expand our IS capabilities," he adds, "not just in terms of size, but also to upgrade our skills and the quality of our organization."

Help wanted

Other major employers in the area, which Tabb describes as having an international focus, include Carnival Cruise Lines, Royal Caribbean Cruises, Florida Power & Light Co., Burger King Corp., Blockbuster Entertainment Group and Office Depot, Inc. Many South Florida companies have small IS staffs, but the shortage of IS professionals in the area will continue to create opportunity, Loane says.

Jacksonville, in northeast Florida, Tampa/St. Petersburg, on the west coast, and Orlando, in central Florida, also have opportunities for IS professionals.

"Jacksonville has an advantage because it's not as touristy as some of the other cities in Florida," says Paul Lowrance, a senior IS staffing specialist at Barnett Technologies, Inc. The firm is the IS arm of Barnett Banks, Inc. and one of Florida's Top 10 employers.

"We're so far north that the economy here is based on business, on industry. This is not where people come to retire," Lowrance says.

He says Barnett filled about 150 IS positions last year, mostly in applications development. He says he expects the same amount of activity through the end of this year and next.

"We're dramatically increasing head count, as our IS group is a very state-of-the-art organization," Lowrance adds. However, he notes that while other companies in the area may not be hiring as aggressively, IS staffers in the region are changing jobs less frequently. That forces employers to go outside the market for new talent.

Besides Barnett, Jacksonville boasts such employers as AT&T Corp., Blue Cross/Blue Shield of Florida, CSX Transportation, Inc., Merrill Lynch & Co. and Prudential Securities, Inc.

Statewide Occupational Employment Estimates

	Systems analyst	Programmer
1992 base year employment	16,056	15,589
2005 projected employment	36,579	21,303
Percent gain	127.82%	36.65%
Average annual openings	1,685	811

Source: Florida Department of Labor and Employment Security, Bureau of Labor Market Information, Tallahassee, Fla.

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Troy, Mich., retail sales

*All companies based in Florida unless otherwise indicated, not including out-of-state employees

Source: Florida Department of Commerce, Division of Economic Development, Bureau of Economic Analysis, Tallahassee, Fla., January 1995

Be prepared

Don't expect that relocating to Florida will be a day at the beach, say IS managers who frequently recruit from outside the state. They advise the following:

- Be prepared to accept that lower costs of living mean lower salaries, says one IS manager who asked not to be identified.
- With the low costs and wide availability of land, new communities and older houses, plan to spend a considerable amount of time choosing your home, Lowrance recommends.
- "You have to learn to call the huge cockroaches we have down here 'Palmetto bugs.' That makes them a lot easier to get used to," Loane says.

"There are plenty of good things about Florida, but you have to come here for the job opportunity, not the environment," he adds. "You won't be on the beach every day. You won't be getting a tan at the office. It won't be like vacation, when you have maid service and eat at restaurants every night. You'll have to work and buy the groceries and pay the bills." ■

Goff is a freelance writer in New York.

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To qualify, you will need at least 5 years technical experience in system administration of networked systems with complete knowledge of UNIX. DEC Alpha hardware, C2 level security and DEC high availability products preferred. Software development experience in C, UNIX, Oracle/equivalent and background in financial environments are desirable. Knowledge of change management and version control processes is also needed. *Job Code: SAM*

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To qualify, you will need at least 5 years experience with information systems. At least 2 years in designing and development of Lotus Notes applications in multi-node environments essential. Knowledge of change management and version control processes is also needed. *Job Code: LNPM*

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To qualify, you will need at least 7 years technical experience in software development and support. Four years of software development experience in C, UNIX, Oracle/equivalent. At least 2 years development/support background in Windows NT, Visual Basic and GUI X applications is preferred. *Job Code: TBA*

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Software Engineers
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Software Engineer
Commercial SW development position involving requirements analysis, design, implementation, integration and test. Must have experience with the development of specs and interface control documents, as well as OO design, C/C++ and CASE tools.

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Software Engineers
Develop real-time and embedded SW for space and avionics applications. Experience with Ada is required; MIL-STD 498 preferred.

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Systems Engineers
Perform SW requirements design and analysis, including SW architecture design and SW systems development. Experience in signal and/or image processing desired. DOD TS clearance with active EBI or SBI may be required.

Software Engineers
Must have experience with C++, OO methodology and image/vision processing in a UNIX environment. Additional experience with GUI, MOTIF, parallel processing or SW reuse/reengineering will be considered a plus. DOD TS clearance with active EBI or SBI desired.

Software Engineers
Perform OO analysis and design using Ada, open systems and relational databases. Experience with VAX/VMS or UNIX OS required, Sybase a plus.

Database Development
Must have experience with relational database design and implementation. Knowledge of data modeling, Oracle, Sybase, Informix, SQL, C, C++, OO design, UNIX and transaction processing desired.

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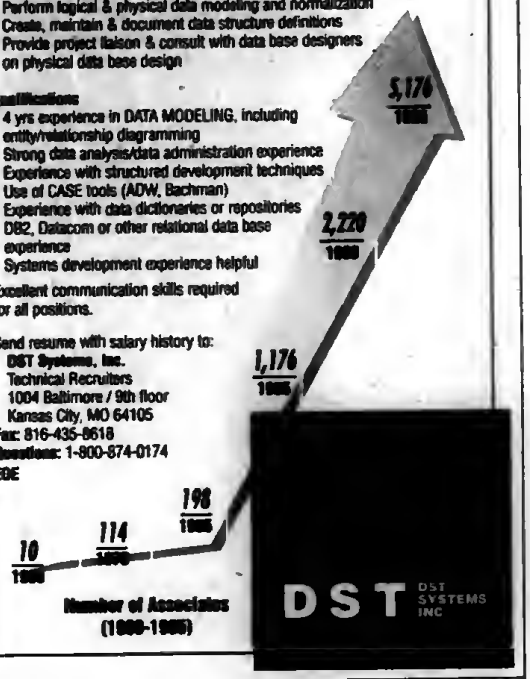
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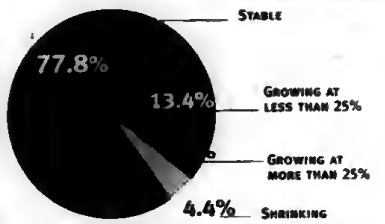
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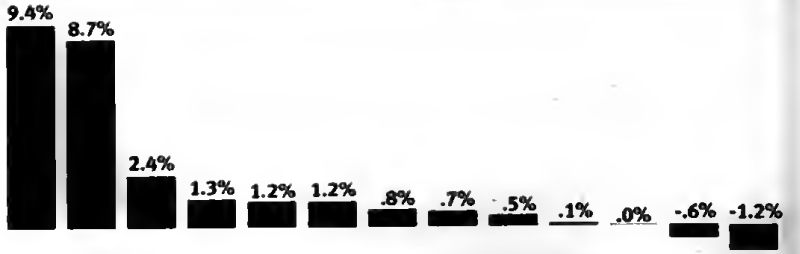
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Don Desjardins
Recruiting Manager/Information Technology
MCI Communications Corp.

"Just recently we hired 65 professionals from 510 responses generated by just one recruitment advertisement in Computerworld. With a qualified hit rate of 80%, Computerworld advertising generates enough responses to keep nine full-time recruiters busy."

With some 40,000 employees worldwide and revenues totaling over $13 billion annually, MCI Communications Corp. has established itself as the nation's second-largest long-distance provider and one of the world's largest communications companies. The company's recent alliance with British Telecom further enhances its position to supply a vast array of telecommunication products and services to the global community. To ensure MCI's competitive edge in the communications marketplace both now and in the 21st Century, Recruiting Manager Don Desjardins advertises in Computerworld to recruit the best IS talent.

"The recent release of networkMCI BUSINESS and internetMCI are just two examples of the sophisticated, seamless communications products our software engineers are continually developing and introducing. Building world-class systems and products requires world-class Information Systems talent. In the networkMCI Services and Engineering groups, our culture demands that we employ only the best. It's this top talent we find and hire by advertising in Computerworld.

"In my mind, Computerworld is one of the best multi-platform, leading-edge information systems publications going. It covers every aspect of the IS world, and its readers are IS professionals with a variety of technical backgrounds. Since MCI's information technology group develops systems and products on a wide range of platforms, from open systems to large mainframes to the Internet, and recruits for extremely diverse technical environments, Computerworld is a perfect advertising fit. It is the industry-specific publication that targets all the top talent in all the right environments.

"Having just completed a three-year migration of our entire systems engineering group from Arlington, Virginia — one thing is certain: Computerworld recruitment advertising was a key element in successfully identifying and hiring qualified IS developers for Colorado Springs. Case in point, during 1994 our recruiters hired 1,124 technical professionals into systems engineering without paying a single agency fee. As a result, our cost-per-hire falls well below the industry average - thanks largely to our Computerworld recruitment advertising.

"On a regular basis, our information technology group is in the market to hire a full range of professionals - from entry-level technical IS recruits to senior network, database, and systems architects. Since we're highly selective, we look to our Computerworld recruitment advertisements to make all the right matches.

"The future is clear. To maintain MCI's telecommunications leadership position well into the 21st Century, we well continue to rely on recruitment advertisements in Computerworld to enhance our visibility and recruit the hard-to-find, high-quality technical professionals crucial to developing products and systems for our global customers."

For all the facts on how Computerworld can help you recruit world-class IS talent, call John Corrigan, Vice President of Computerworld's Professional Development Division, at 1.800.343.6474, x8201.

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• Update on Diversity	
• Applicant Tracking	
9:15 a.m. - 12:10 p.m.	How To Pick The Right People
12:15 p.m. - 2:00 p.m.	The Top 10 Trends Affecting Information Systems Careers
2:10 p.m. - 3:05 p.m.	[illegible]
3:20 p.m. - 5:00 p.m.	Town Hall Forum
5:00 p.m.	Program ends



How To Pick The Right People
9:15 a.m. - 12:10 p.m.
Dr. William Swan
Learn the latest in how to pick the right people from Dr. William Swan, a nationally recognized expert in interviewing and performance appraisal. Dr. Swan conducts interview selection seminars and workshops for major corporations and government agencies and has personally trained over 25,000 managers to conduct more effective interviews.



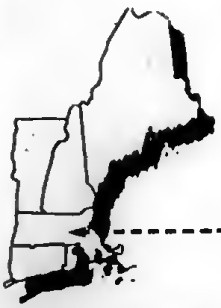
The Top 10 Trends Affecting Information Systems Careers
12:15 - 2:00 p.m.
Luncheon/Keynote Address
Paul Gillin, Executive Editor, Computerworld
Sure, there are new skills entering the market every day, but what are the top 10 trends you should really keep an eye on? Paul Gillin, one of the country's leading watchers of the Information Systems profession will give you an up-to-the-minute view in this very special keynote address.



Town Hall Forum
3:20 p.m. - 5:00 p.m.
moderated by
Jack Erdlen, Strategic Outsourcing
In this session, you'll not only be able to propose your specific questions for open discussion, you'll learn of real world issues and solutions from your peers. You won't want to miss this rare opportunity as Jack Erdlen, an expert in the HR field, leads us through this modern discussion of your recruiting topics.

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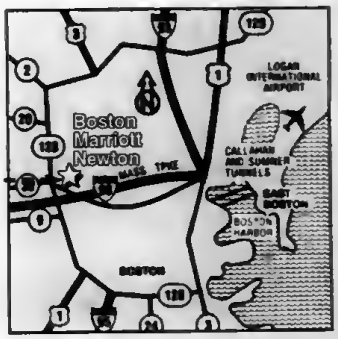


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Marketplace

Wrappers pave alternate path to objects

By Daniel Lyons.

What code wrappers promise is compelling: Instead of having to rewrite all of your legacy code, you can simply "wrap" the parts you want to keep and move them forward into an object-oriented environment.

There's no messy rewrite, no worries about losing the precious business logic that has built up in your legacy applications over the years. And there's no need to retrain your legions of Cobol programmers.

TECHNOLOGY ROUNDUP

Code wrappers

"As people make the transition to object-oriented environments, they want to be able to leverage their assets," says Skip McGaughey, market manager at IBM, whose VisualAge product is a popular wrapper. "With wrappers, a Cobol programmer can continue to write Cobol applications and then, by 'wrappering' that code, you can make it behave, look and feel like an object-oriented component."

No easy answer

But wrappers aren't a panacea. Deciding which parts of a legacy application should be wrapped can be time-consuming. And digging into an old Cobol application can bring you face-to-face with a lot of idiosyncrasies that you may wish you had left alone.

"One end user I talked to told me that using wrappers on legacy code is like putting lipstick on a pig — it's still ugly," says Paul Cubbage, an analyst at Dataquest, Inc., a market research firm in San Jose, Calif. Cubbage says many sites either are happy with their legacy code running on a mainframe and want to keep it or are unhappy and want to replace the system altogether. For those customers, wrappers offer a little improvement over the old Cobol system but fall far short of a true built-from-scratch object-oriented system.

The best way to look at wrappers is as part of a transition from legacy systems to object-oriented systems, says John Tibbetts, president of Kinexis, a San Francisco consulting firm that specializes in application development issues. "The life span of the wrapper is going to depend on how long it takes you to get a fully object-oriented system in place," Tibbetts says. That could be five to 10 years for most companies, he adds.

Some companies use wrappers to bring all of their code into an object-oriented environment, and then they rewrite each component in a phased process. For companies that don't have enough programmers to rebuild their entire information systems all at once, wrappers make sense.

Wrappers also offer a level of comfort, says Thomas Murphy, product manager at ParcPlace-Digitalk, Inc. in Palo Alto, Calif. "Most customers, as they move into object-oriented systems, actually end up building everything from scratch," he says. "But they like the idea of being able to reuse their legacy code. They like that that option is there. For many customers, it's just a comfort-level thing." ■

Lyons is a freelance writer in Ann Arbor, Mich.

Here's a look at some leading wrappers:

Parts Wrapper for Micro Focus Cobol
Price: $2,000
Platforms: Windows 3.1, Windows NT, OS/2
Parts Wrapper is based on the Smalltalk object-oriented programming language and is part of a family of code wrappers from recently merged ParcPlace-Digitalk. Other ParcPlace-Digitalk wrappers handle CICS and High-Level Language Application Program interface, for example. The company claims to have "sort of" invented the term "wrapper."

Using the Cobol wrapper involves compiling the Cobol code in Micro Focus Cobol and creating a Dynamic Link Library that contains the Cobol program's subprograms. The subprograms can be called by other parts on the Parts Workbench.
ParcPlace-Digitalk
Sunnyvale, Calif.
(800) 759-7272

VisualAge
Price: $1,000 for standard; $3,700 for team
Platforms: OS/2, Windows, Unix, AIX.
VisualAge is based on Smalltalk and can wrap not just Cobol but also C and other languages. VisualAge boasts support for a wide range of databases and communications protocols. It also supports multimedia data.
IBM
Armonk, N.Y.
(800) 426-3333

CA-Visual Realia
Price: $2,500
Platforms: Windows
CA-Visual Realia uses a Windows-based visual programming environment that lets programmers use Cobol business logic in graphical user interface (GUI) applications. Programmers use GUI tools to paint screens, while Cobol controls the business logic. Marc Sokol, vice president of product strategy at CA, likens the tool to Microsoft Corp.'s Visual Basic. For database connectivity, CA-Visual Realia comes with a SQL preprocessor and more than 20 Open Database Connectivity database drivers. A version for OS/2 is forthcoming, Sokol says.
Computer Associates International, Inc.
Islandia, N.Y.
(516) 342-5224

VanGUI for MS/Cobol
Price: Not available
Platforms: Windows
VanGUI is an interface builder that lets programmers use Windows controls and Visual Basic custom controls to build GUIs while using Cobol to handle the underlying logic of the application. This means they can move Cobol applications or parts of them forward into a Windows environment. The product is expected to ship in November. Pricing has not been set.
Ryan McFarland,
a division of Liant Software Corp.
Austin, Texas
(512) 343-1010

Micro Focus Object Cobol Version 3.3
Price: $1,600
Platforms: Windows NT, OS/2
Object Cobol 3.3 isn't billed as a "wrapper," but the product can be used to contain pieces of Cobol code and bring them forward into an object-oriented environment.

The product enables development of 32-bit applications and also lets programmers migrate 16-bit applications into new environments. Micro Focus also recently announced Visual Object Cobol for Windows 95, a 32-bit development tool.
Micro Focus, Inc.
Palo Alto, Calif.
(415) 856-4161

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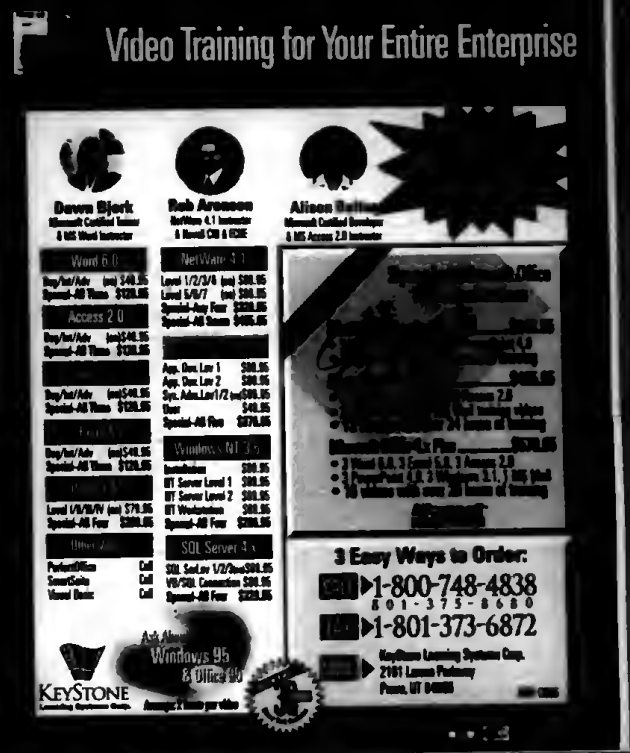
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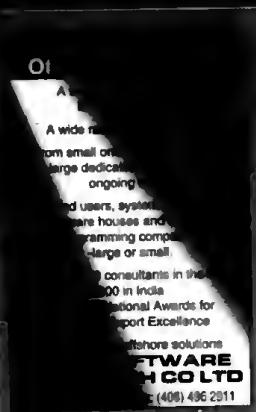
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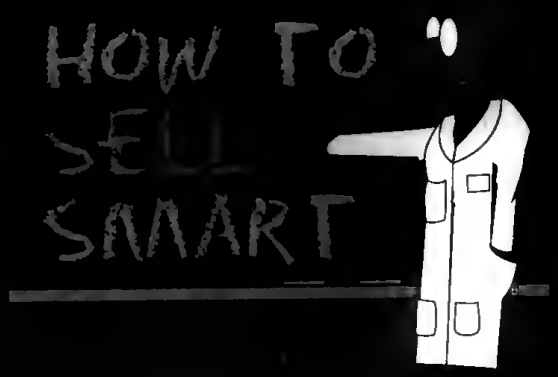
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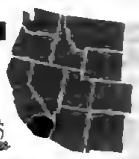
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Oct. 13 Stock Ticker

Gainers / Losers

Percent

Shiva	+8.2	Vmark Software Inc. (L)	-41.8
Data Race Inc.	+24.3	Platinum Software (L)	-27.0
Ascend Communications	+31.5	Bindus Inc. (L)	-35.5
Apple Inc.	+20.5	Exabyte Computer Corp.	-24.2
Picturetel Corp	+18.8	DMC Software Inc.	-23.6
Computer Network	+18.8	IPL Systems Inc.	-22.6
Centigram Communications	+18.1	Powerhouse Inc.	-19.6
Software Publishing Corp.	+15.5	Cabletron Systems	-16.9

Dollar

Ascend Communications	+ 8.75	BMC Software Inc.	-10.38
Picturetel Corp	8.50	Mr. Payroll Inc.	-7.38
Cabletron Systems	4.50	Vmark Communications (L)	-6.38
Xylogics Inc. (H)	4.38	Powerhouse Inc.	-4.50
Digital Equipment Corp.	4.38	Micron Technology	-4.43
Apple Inc.	4.25	Cirrus Logic	-4.19
Netscape Comm. Corp.	4.00	DSC Communications	-4.00
Bay Networks Inc. (H)	3.88	Autodesk Inc.	-3.88

[redacted]

Coming-out party

Wall Street hungers for the next big thing in technology, and for the third straight quarter, several companies have taken advantage of this craving with initial public offerings (IPO). Thirty technology companies went public between July and the end of September, raising the total of IPOs in this sector to 101 for the year, according to Technologic Partners, Inc., a financial publisher in New York.

Leading the charge in early August was Netscape Communications Corp. (NSCP), maker of the popular Netscape World Wide Web browser. Analysts said a well-known product and the public's desire to grab onto anything Internet-related combined to create a wild trading frenzy that doubled the opening stock price in one day.

Other companies with notable stock price increases since their initial offerings include OnTrak Systems, Inc. (ONTK), a provider of semiconductor equipment; Unison Software, Inc. (UNSN), a developer of data center automation and programming applications; and Legato Systems, Inc. (LGTO), a developer of LAN software and file system accelerators. Overall, prices for IPOs have dropped an average of 11%; that reflects the recent market correction in technology stock prices. — *Stewart Deck*

Formal introductions

The following is a sample of information technology IPOs for the quarter ending Sept. 30. Only deals valued at less than $50 million are listed.

	IPO date	IPO price	Oct. 11 price
[redacted]			
Computron Software	Aug. 23	$17.50	$14.75
[redacted]			
Legato Systems	July 6	$19.00	$25.25
[redacted]			
Novadigm	July 14	$15.00	$18.00
[redacted]			
Orion Network Systems	Aug. 1	$14.00	$10.00
[redacted]			
VeiCom Semiconductor	July 27	$8.50	$9.50
[redacted]			
Vantive	Aug. 14	$12.00	$13.75

Source: Technologic Partners, Inc., New York

Exch	52-Week Range			Oct. 13 Wk Net Wk Pct 3 on Change Change
COMS	49.00	18.13	3Com Corp	46.00 1.31 2.9
AIT	52.75	38.50	Ameritech Corp	51.63 0.88 1.7
T	64.88	47.25	AT&T	63.38 -0.38 -0.6
ASND	49.38	6.00	Ascend Communications	49.50 8.75 21.5
BNYN	19.25	8.50	Banyan Systems Inc. (L)	6.88 -0.63 -8.8
BNET	60.13	23.13	Bay Networks Inc. (H)	60.13 3.88 6.9
BEL	62.25	46.38	Bell Atlantic Corp	62.00 2.25 3.8
BLS	76.75	50.50	Bellsouth Corp	75.25 0.50 0.7
BBN	39.38	12.63	Bolt, Beranek & Newman	35.13 -1.25 -3.4
BRKT	22.25	8.00	Brooktrout Technology	19.00 0.75 4.1
CS	69.75	37.88	Cabletron Systems	68.13 4.50 7.1
CGRN	23.63	12.25	Centigram Communications	23.63 3.63 18.1
CHPN	31.13	20.00	Chipcom Corp	68.75 1.38 2.9
CSCO	75.88	26.63	Cisco Systems Inc.	71.13 3.13 4.6
CLIX	11.38	8.13	Compression Labs Inc.	7.13 -0.25 -3.4
CMNT	12.25	4.25	Computer Network Tech.	6.63 -0.25 -3.6
XCOM	14.50	7.50	CrossComm	11.25 0.50 4.7
DASW	4.50	2.25	Data Switch Corp	4.25 0.19 4.6
DIGI	64.00	26.88	DSC Communications	41.00 -4.00 -8.9
FORE	42.00	22.88	FORE Systems Inc.	38.25 2.19 6.1
GDC	35.88	9.25	General Datacomm Inds.	33.75 -0.38 -2.7
GTE	40.38	75.88	GTE Corp (H)	39.63 -0.25 -0.6
ITT	115.50	92.00	ITT Corp	123.38 2.13 1.8
MCIC	27.13	17.25	MCI Communications Corp.	24.63 -1.25 -4.8
MICM	13.50	5.50	Micom Communications Corp	9.63 -0.50 -4.8
MNPI	22.25	7.13	Microcom Inc.	18.00 0.75 4.3
NTRX	50.50	3.75	Netrix Corp (L)	6.50 -0.25 -3.7
NCDI	12.00	3.25	Network Computing Devices	5.50 -0.38 -3.3
NWK	62.00	14.50	Network Equipment Tech.	36.63 -3.38 -8.2
NETG	64.25	18.63	Network General	38.13 1.88 4.6
NN	43.38	25.00	Newbridge Networks Corp (L)	26.88 0.25 0.9
NT	41.00	31.25	Northern Telecom Ltd.	34.13 -1.25 -3.5
NOVL	23.25	14.13	Novell Inc.	13.13 -2.44 -13.9
NVN	48.25	35.88	Novex Corp	47.88 0.75 1.6
OCTL	62.63	17.75	Octel Communications Corp.	31.50 -0.63 -1.9
ODSI	43.25	8.50	Optical Data Systems Inc.	38.13 -1.75 -4.7
PMKL	8.38	2.13	Peerless Data Comm Networks	6.75 0.63 10.2
PCTL	62.00	16.13	Picturetel Corp	33.75 8.50 18.8
PTON	10.75	4.75	Proteon Inc.	8.63 0.00 0.0
RACO	7.88	3.00	Racotek Inc.	8.13 0.75 9.2
RETX	3.23	3.50	Retix	6.13 0.00 0.0
SFA	24.38	11.75	Scientific Atlanta Inc (L)	24.00 -1.63 -10.4
SBC	35.88	39.50	Southwestern Bell Corp (H)	54.75 0.13 0.2
FON	38.88	25.88	Sprint Corp	33.88 1.50 4.4
SMSC	31.63	12.50	Standard Microsystems Corp.	20.00 -0.38 -2.3
STRW	57.50	23.00	Stratacom Inc.	50.25 1.00 2.0
TBIT	8.13	3.63	Telebit Corp.	3.63 -0.19 -4.9
USRX	91.50	16.00	US Robotics	85.50 3.25 4.0
USW	48.38	29.63	US West Inc.	46.88 -0.63 -1.3
XIRC	23.50	9.13	Xircom	12.06 1.50 -31.5
XLGX	62.25	13.13	Xylogics Inc. (H)	62.25 4.50 7.8

AALR	9.63	3.63	Advanced Logic Research	7.38 -0.50 -6.3
AAPL	50.13	33.63	Apple Computer Inc.	38.63 1.00 2.8
ASTA	19.13	7.50	AST Research Inc. (L)	9.00 -0.13 -1.4
CPQ	54.75	31.13	Compaq Computer Corp.	49.50 2.50 5.3
DELL	93.88	56.25	Dell Computer Corp.	62.50 0.63 0.8
GATE	32.75	16.00	Gateway 2000 Inc.	31.00 1.38 4.6
HWP	75.88	45.13	Hewlett Packard Co	64.13 2.00 2.4
MUEI	29.88	3.23	Micron International Inc.	25.25 1.63 8.1
SGI	45.63	24.88	Silicon Graphics	34.13 1.75 5.4
SUNW	66.25	28.13	Sun Microsystems Inc.	50.38 2.38 4.4
TAN	64.38	41.13	Tandy Corp	60.88 1.75 3.0

AMH	13.63	8.50	Amdahl Corp	10.00 -0.13 -1.2
CNX	6.88	3.63	Convex Computer	4.38 0.00 0.0
CYR	29.25	16.63	Cray Research Inc.	25.75 0.38 1.8
DGN	12.00	6.25	Data General Corp	50.00 0.63 6.7
DEC	69.50	38.25	Digital Equipment Corp	49.13 4.38 9.8
ENCC	4.44	1.00	Encore Computer Corp	1.56 -0.56 -26.3
HHWK	18.50	9.25	Harris Computer Systems Corp.	13.13 -1.50 -9.0
IBM	114.63	38.88	IBM	93.25 -1.63 -1.7
MDCD	10.75	3.00	Meridian Data Inc	8.00 -0.68 -8.9
NETF	11.00	4.23	NetFrame	6.13 -0.50 -7.5
SQNT	75.38	34.13	Sequent Computer Sys.	16.88 -2.13 11.2
SEQ3	10.00	3.13	Sequoia Systems Inc.	8.00 -0.75 11.1
SRA	39.88	23.00	Stratus Computer Inc.	24.38 -1.88 -7.1
TDM	19.25	50.25	Tandem Computers Inc. (L)	31.25 -0.88 -2.7
TRCD	2.63	3.38	Tricord Systems	2.13 -0.13 -2.9
UIS	13.63	7.38	Unisys Corp	7.38 -1.00 -11.9

ADBE	66.50	27.25	Adobe Systems Inc.	48.25 1.23 -2.5
AMSWA	8.63	7.50	American Software Inc.	7.13 -0.38 -4.6
APLX	33.00	9.75	Applix Inc.	25.00 4.25 20.3
ACAD	53.00	30.25	Autodesk Inc.	32.88 -3.88 -9.3
BACH	7.88	2.00	Bachman Info. Systems	4.75 -0.25 -3.8
BGSS	36.50	12.00	BGS Systems Inc.	25.38 0.00 0.0
BMCS	51.50	30.50	BMC Software Inc.	33.50 -10.38 -23.6
BOOL	31.25	19.88	Boole & Babbage	29.00 1.00 3.3
BORL	37.25	6.00	Borland Int'l Inc.	23.25 -1.00 -4.8
BROC	11.75	3.25	Brock Control Systems Inc	7.25 -0.50 -6.5
CSEM	3.75	1.53	CE Software	2.23 0.13 5.9
CYE	22.00	9.13	Cheyenne Software Inc.	19.88 0.75 3.9
CDGNF	33.50	12.88	Cognos Inc.	33.00 0.88 2.7
CA	51.75	38.75	Computer Associates	47.25 2.38 5.3
CVN	14.38	3.00	Computervision Corp.	11.50 -0.13 -1.1
CPWR	69.00	37.25	Compuware Corp. (L)	38.38 2.38 -11.4
CSRE	32.38	10.75	Cosmare Inc.	30.00 0.50 1.7
COSFF	19.50	50.13	Corel Corp	15.63 -0.50 -3.1
DWTI	14.25	9.00	Datawave Technologies Inc.	12.38 0.38 3.1
FILE	31.00	22.38	Fulcrey Corp	42.23 -0.63 -1.5
DDDDF	8.25	3.38	4th Dimension	3.63 -0.13 -2.2
FRAM	33.00	13.25	Frame Technology	25.63 -0.75 -2.8
FTPS	75.50	30.25	FTP Software Inc.	75.00 -0.50 -2.0
GSOF	26.50	8.00	Group 1 Software	12.38 0.00 0.0
GPTA	13.88	8.00	Gupta (L)	8.13 -0.38 -4.4
HOGN	12.00	4.63	Hogan Systems Inc.	8.75 -0.63 -6.7
HYSW	56.75	31.25	Hyperion Software Corp.	51.00 -1.50 -2.9
IRIC	38.63	31.25	Information Resources	32.63 -0.75 -2.6
IFMX	38.38	15.63	Informix Corp.	30.75 0.13 0.4
INGR	14.88	7.38	Intergraph Corp	12.88 0.13 1.1
LEAF	11.00	2.88	Interleaf Inc.	9.00 0.13 1.4
ISLI	26.25	12.63	Intersolv Inc.	20.25 0.00 0.0
INTU	91.75	25.25	Intuit Inc.	68.25 1.44 2.7
LGNT	48.25	28.13	Legent Corp.	47.13 -0.13 -0.3
MGKF	11.50	3.63	Magic Software Enterprises	8.13 0.75 10.2
MANU	16.75	6.75	Manugistics Group Inc.	38.38 0.88 5.6

Exch	52-Week Range			Oct. 13 Wk Net Wk Pct 3 on Change Change
MAPS	40.00	16.50	Mapinfo Corp	20.50 1.25 -7.9
MATH	7.38	2.00	MathSoft	6.00 -0.75 -11.1
MCAF	56.50	10.50	McAfee Associates	48.25 2.75 5.9
MENT	71.38	10.88	Mentor Graphics	19.50 -0.63 -3.1
MFGY	13.00	30.50	Micro Focus (L)	30.50 -0.38 -1.4
MCKU	13.88	5.00	Microware Inc.	50.25 -0.75 -6.8
MSFT	109.25	33.00	Microsoft Corp	87.25 1.00 1.2
NETM	27.25	50.88	NetManage Inc	30.25 -1.13 -4.3
NSCP	74.75	45.75	Netscape Comm. Corp.	62.31 4.06 6.4
ORCL	67.00	24.75	Oracle Corp	48.00 1.00 2.6
PMTC	64.25	31.25	Parametric Technology	63.75 1.88 6.5
PARQ	23.75	7.25	ParcPlace Systems Inc (L)	9.13 -1.38 13.3
PSFT	91.00	24.13	Peoplesoft	87.25 2.25 2.6
PTEC	14.38	6.63	Phoenix Technologies	11.25 0.75 6.8
PSQL	36.88	6.88	Platinum Software (L)	6.25 -2.50 -27.0
PLAT	26.38	13.50	Platinum Technology	20.13 -0.88 -4.6
PRGS	70.38	29.50	Progress Software Corp	45.23 -2.50 -3.7
QDEX	22.13	1.94	Quarterdeck Corp	18.06 -0.31 -1.7
RNBO	26.75	11.75	Rainbow Technologies Inc	20.38 1.88 10.1
RSTO	10.13	2.00	Rasterops	6.94 -0.38 -6.7
ROSS	7.75	3.63	Ross Systems	6.38 -0.13 -2.0
SKEY	53.75	30.09	Softkey International Inc.	44.88 2.63 6.2
SPCO	6.75	2.88	Software Publishing Corp	3.81 0.50 15.1
SOT4	12.50	4.25	State of the Art	5.50 0.75 3.8
SSW	67.88	39.13	Sterling Software Inc.	45.23 2.00 4.6
SDRC	20.75	4.63	Struct. Dynamics Research	10.75 1.13 6.6
SYBS	38.00	19.88	Sybase Inc.	34.19 0.50 1.7
SYMC	33.75	15.00	Symantec Corp	26.13 -2.25 -7.9
SMPS	34.50	19.75	SynOptics	27.75 -2.00 -6.7
SSAX	45.75	11.38	System Software Assoc.	38.38 1.68 -4.7
SYSF	18.13	5.50	Systemsoft Corp	12.38 -1.38 -10.0
VIEW	24.00	7.88	Viewlogic Systems	12.75 -0.75 -5.6
VMRK	21.50	7.00	VMark Software Inc. (L)	7.25 -5.38 -46.6
WALK	9.25	4.63	Walker Interactive Systems	8.00 0.50 5.9
WALL	35.50	14.50	Wall Data Inc. (L)	16.25 0.38 2.4
WANG	19.38	9.13	Wang Laboratories Inc.	10.63 1.50 8.9

AMD	38.25	22.25	Advanced Micro Devices	27.50 4.25 8.8
ADI	39.50	20.00	Analog Devices Inc.	34.88 -0.13 -0.4
ATML	26.75	15.13	Atmel Corp	21.63 -0.38 -1.7
CMPS	15.88	5.00	Chips and Technologies	12.50 -1.13 -8.3
CRUS	81.13	10.50	Cirrus Logic	47.50 -4.19 -8.1
CY	55.50	30.63	Cypress Semiconductor Corp	31.75 -3.88 -10.9
DS	24.88	13.38	Dallas Semiconductor	25.63 2.00 10.3
ISSS	24.25	11.63	Integrated Silicon Systems	29.88 1.88 6.7
INTC	78.38	38.75	Intel Corp	64.88 1.13 1.8
LSI	62.50	30.25	LSI Logic Corp.	51.25 -1.13 2.1
LSCC	43.00	15.50	Lattice Semiconductor	37.94 -1.31 -3.3
MU	96.75	16.00	Micron Technology	68.13 -4.63 -6.4
MOT	82.50	51.50	Motorola Inc.	69.25 -7.38 10.6
NSM	33.63	14.63	National Semiconductor	26.00 0.38 0.0
SIRA	28.75	6.63	Sierra Semiconductor	23.75 0.75 3.3
TXN	83.25	52.75	Texas Instruments	72.88 2.38 -3.3
VLSI	39.13	10.63	VLSI Technology	27.13 -2.69 -9.0
WWTR	6.88	1.78	Wavetec	3.50 1.13 25.7
WDC	32.13	15.13	Western Digital Corp	13.63 -0.75 -5.6
XLNX	55.50	36.38	Xilinx	43.63 -1.88 -4.1
ZLG	54.13	35.63	Zilog Inc. (L)	38.00 -1.13 -2.9

APCC	25.88	10.38	American Power Conversion	12.00 -0.38 -3.0
ADPT	47.25	10.13	Adaptec Inc.	41.38 1.50 3.5
BTEC	27.25	15.38	Banctec Inc.	23.50 3.50 13.2
CDEX	13.13	3.38	Cabletron Corp	6.61 1.25 -16.9
CGN	6.38	1.38	Cognitronics Corp	4.61 0.18 4.1
CNR	19.75	9.00	Connor Peripherals	17.50 0.88 5.3
CREAF	18.31	5.88	Creative Technologies Inc.	12.50 -0.38 -2.9
DACE	13.13	3.50	Data Race Inc.	5.75 3.13 24.3
DTAI	9.38	6.25	Dataram Corp	7.38 0.13 1.7
EMC	27.38	13.38	EMC Corp. (L)	14.50 -2.38 14.7
EMLX	28.50	3.75	Emulex Corp.	15.63 2.00 14.7
ESCC	38.00	11.25	Evans & Sutherland	17.00 -0.50 -2.9
EXBT	24.00	10.00	Exabyte	12.50 0.00 0.0
IISU	4.25	1.88	Intelligent Info. Systems	2.63 -0.19 -6.7
IOMG	30.00	7.88	Iomega Corp	28.88 1.38 9.1
IPLSA	7.88	2.68	IPL Systems Inc.	4.44 -1.31 -22.8
KMAG	76.88	27.25	Komag Inc.	67.38 5.88 8.6
MKTR	7.25	2.63	Maxtor Corp	4.00 -0.38 -8.6
MLIS	31.50	6.00	Micropolis Corp	3.00 -0.75 -4.8
PWCI	23.75	8.75	Pinnacle Micro Inc.	20.38 0.13 0.7
PTNX	38.75	33.25	Printronix Inc.	22.50 -0.50 -19.6
AQM	10.50	4.00	QMS Inc.	6.50 -0.38 -7.7
QNTM	78.50	33.75	Quantum Corp	30.13 0.88 6.5
RDUS	13.60	3.38	Radius Inc. (L)	4.73 -1.03 -25.5
REC	12.63	6.50	Recognition International	12.13 1.02 9.0
SEG	40.38	27.88	Seagate Technology	42.75 2.75 6.9
STK	31.25	17.88	Storage Technology	23.88 0.38 1.6
TEK	50.38	31.38	Tektronix Inc	38.63 1.88 3.3
XRX	135.38	90.63	Xerox Corp	123.88 2.63 2.6

AMSY	38.00	15.00	American Negat. Systems	25.00 0.00 0.0
AAC	7.88	0.50	Anacomp Inc. (L)	6.56 -0.06 -10.0
ANLY	33.00	17.75	Analysts Int'l.	30.63 2.38 -6.3
AUD	71.63	36.75	Auto Data Processing	71.63 2.25 3.2
CATP	32.75	14.00	Cambridge Tech Partners	31.38 2.13 4.3
CEN	46.88	23.50	Ceridian Corp.	46.38 1.13 2.5
CDO	32.50	19.50	Comdisco Inc.	30.63 0.75 2.5
CHRZ	23.75	7.88	Computer Horizons	22.38 3.38 18.4
CSC	67.38	41.50	Computer Sciences	62.38 2.25 4.3
TSK	16.13	7.50	Computer Task Group	13.00 0.00 0.0
CPU	44.38	10.38	CompUSA Inc.	40.63 -1.63 -3.8
CDAT	12.50	5.38	Control Data Systems Inc.	11.13 -0.63 -5.3
EGGS	14.25	6.63	Egghead Discount Software	8.38 0.00 0.0
GME	47.50	34.75	General Motors E (DS)	46.50 0.63 1.4
INAC	15.25	6.88	Inacom Corp	50.75 -0.75 -6.5
INEL	17.88	7.25	Intelligent Electronics (L)	8.00 -0.38 -6.5
MSBL	10.75	3.88	Medisel	3.38 -0.38 -6.5
MICA	15.00	8.50	Micrognic Inc.	9.38 1.25 -11.6
PAYX	47.00	23.23	Paychex	63.50 -1.75 -2.8
PMS	54.25	37.75	Policy Management Sys	45.88 0.38 0.8
REY	36.63	22.75	Reynolds and Reynolds	35.25 0.38 1.4
SEIC	24.50	18.75	SEI Corp	19.88 0.19 -0.9
SMED	42.75	27.38	Shared Medical Systems	41.00 0.00 0.0
SHSF	11.00	4.00	SHL Systemhouse	12.69 0.06 0.5
SSPE	26.50	12.00	Software Spectrum Inc.	23.25 -0.31 -1.3
SNDT	31.75	17.38	Sungard Data Systems	26.88 1.63 -2.7

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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Details emerge on P7 chip

CONTINUED FROM PAGE 1

corporate advanced compiler technology, a new instruction set and a 64-bit architecture that will be backward-compatible with both x86 and PA-RISC instruction sets.

The Intel-only version of the chip will use elements of the same architecture but will be aimed at lower-end server systems, according to the sources. This version is expected to ease users' transition to the HP/Intel P7.

Intel is using this strategy to hedge against the risk involved in moving from 32- to 64-bit architectures, said David Wu, an analyst at The Chicago Corp. in New York.

Intel is using this strategy to hedge against the risk involved in moving from 32- to 64-bit architectures

It is also using it as a fallback in case the full-fledged 64-bit version fails to gain full market acceptance, he said.

According to a recent report by The Chicago Corp., the first 2.5V Intel-only versions will achieve a performance of about 1,000 SPECint92. That compares with the sub-200 SPECint92 performance of most mainstream processors today. SPECint 92 is a benchmark that clocks a processor's performance when conducting integer operations, which are the basis for applications such as spreadsheets.

The full-fledged version will also be 2.5V and have a performance of about 1,500 SPECint92.

That kind of performance is definitely feasible, said Linley Gwennap, editor of "The Microprocessor Report" in Sebastopol, Calif. "It is our understanding that the chips will run x86 and Unix in emulation but will run them much faster than current processors do natively," he said.

Meanwhile, the vendor is tweaking its soon-to-be-released 32-bit Pentium Pro to fix the performance problems the chip will have running 16-bit applications. Because it is heavily optimized for 32-bit code, the Pentium Pro has disappointed beta testers on its performance with 16-bit applications.

IBM claims PowerPC 620 on track, despite derailment talk

By Jaikumar Vijayan and Lisa Picarille

Despite IBM's official and vehement claims to the contrary, sources close to the development effort claim the future of the PowerPC 620 chip is in doubt.

The 64-bit 620 chip, to be manufactured by Motorola, Inc. and IBM, was expected to be used by vendors building high-end servers. Now, sources close to IBM say Big Blue is rethinking its decision to make the 620 because it is expensive to produce and to date offers very little performance benefit over the PowerPC 604.

64-bit chips

Moreover, Jeff Mason, a vice president at IBM's RS/6000 server division, recently told *Computerworld*, "I would tell you there is thoughtful debate on that subject among our PowerPC Alliance partners today, and no conclusion has been made. With the increased performance of the 604s, do we need the 620?" he asked. "That's a decision we haven't made yet. It's currently being reviewed by the partners. But to say we have made the decision is premature."

Shaking the Apple tree

The lack of vendor interest in the chip — especially by Apple Computer, Inc., — is also thought to be a major factor that will influence the decision, analysts said last week. Apple, the largest PowerPC chip customer, doesn't have any plans for servers based on the 620 chip and instead is working on a line of high-end multiprocessing servers, code-named Shiner, that use the 604 chips, according to sources inside Apple. Thus far, no other manufacturer has announced 620-based servers.

Published reports last week also suggested the delay was due to problems in getting the multiprocessing component of the chip to work. Kaivalya Dixit, a program director at IBM Microelectronics, last week denied any such problems.

Already about six months behind schedule, the 620 was initially expected to run at 150 MHz and was being positioned as the most powerful microprocessor in the PowerPC arsenal. The 604 running at 133 MHz is currently the fastest in the PowerPC family.

IBM officials at The Microprocessor Forum conference in San Jose, Calif., last week, however, categorically said they aren't killing the 620. According to Dixit, the company is currently benchmarking the chip and scheduling it for launch sometime in the first quarter of next year. Motorola officials also denied plans to ax the 620 chip.

A decision not to go ahead with the 620 will make IBM the only major vendor without a 64-bit platform. Hewlett-Packard Co.'s upcoming PA-RISC 8000, Digital Equipment Corp.'s Alpha and Sun Microsystems, Inc.'s UltraSPARC are all 64-bit chips.

Senior editor Jean S. Bozman contributed to this story.

Clone maker jumps the gun

By Jaikumar Vijayan

Upstart chip maker NexGen, Inc. last week surprised industry observers by announcing the first Pentium Pro clone chip, even before Intel Corp. announced its own next-generation chip.

However, NexGen and analysts cautioned that actual systems based on the Nx686 chip won't hit the market until the second half of 1996. A limited number of systems with the Pentium Pro chip are expected to ship by year's end.

Right around the corner

For users, the advent of such early sixth-generation clone chips will mean the availability of low-cost Pentium Pro-class alternative workstations by the end of next year.

"They are shooting at a moving target with bullets that won't be around for another year at least," said Craig Barrett, Intel's chief operating officer.

Milpitas, Calif.-based NexGen, which last week demonstrated an early version of the chip running standard PC applications, claimed last week that the new chip will be as fast as the Pentium Pro when running 32-bit code and faster than Intel's chip when running 16-bit code.

Internet

CONTINUED FROM PAGE 1

ers, obtaining credit-card numbers or other private information," the researchers said.

Pretty scary stuff, right? Yes, but the various ways to "spoof" NFS — and other systems such as Microsoft Corp.'s Windows NT — have been known for years and have known remedies. For example, use of cryptographically secure "digital signatures" and checksums can ensure the integrity of software downloaded from the Internet.

"Secure electronic commerce is an end-to-end — buyer's wallet to seller's bank — problem, and the software used needs to be secure and trusted," said John Pescatore, an information security analyst at Infovision International in Falls Church, Va.

John S. Swanteck, manager of Unix systems and PCs in the Capital Markets Group at First Union Corp. in Charlotte, N.C., speaks for many users when he says the 'net is a dangerous place, but the dangers can be overcome (see chart). It is a management problem, not a technological one, he emphasized.

"The Internet offers the potential for a huge security risk that has not happened yet," Swanteck said. "There's plenty of talent out there, but it hasn't really been bent to stealing yet."

Network crime watch

The following are top security risks to networked computers

For these vulnerabilities ...	Experts recommend you ...
Password guessing	Use eight-character or longer passwords not found in dictionaries and change them frequently.
Password sniffing	Do not send unencrypted passwords over unsecure networks.
Exploitation of operating system security holes	Read computer incident response advisories and apply all vendor fixes.
Intrusion from the outside into the corporate network	Use a carefully configured firewall.
Violations of message integrity or authentication	Use digital signatures based on public-key cryptography.
Violations of message confidentiality	Use strong cryptography, such as the government's Data Encryption Standard.
Exploitation of security holes in software such as "sendmail"	Use alternatives or turn off the least secure features.

So will those dangers block First Union's move into on-line banking? "No. I don't think it's going to slow us down very much," Swanteck said. "I think we can deliver very good security, better than is commonly used."

First Union has set up a "virtual marketplace and community center" on the Internet that brings its merchant customers and consumer customers together for on-line shopping. The site is protected by encryption software from Open Market, Inc. in Cambridge, Mass.

Harold Deal, a vice president at Charlotte-based NationsBank Corp., said electronic banking is inherently no more risky than banking with paper checks, which has been protected during the years by various safeguards.

NationsBank, which is moving forward on a number of on-line banking projects despite the risks, seems unlikely to wait for the Internet to undergo a "time-consuming redesign." As Deal said, "No business is risk-free. Banks are in the business of managing risks."

Buried deep in last week's Internet posting about NFS risks is at least one bit of good news for users: "We realize that it is impossible to eliminate all security holes. ... Fortunately, in practice, it should suffice to handle far less than all of them," the University of California researchers said.

Apple tries to dance with IBM, but who's leading?

Charles Babcock

It's desperation talking when the chairman of Apple Computer publicly states that IBM should abandon OS/2 so it can get behind the Macintosh. But that's what A. C. Markkula Jr., normally a near recluse, said recently in an interview in *The Wall Street Journal*.

Even if IBM wanted to write off its $2 billion investment in OS/2, which it doesn't, it still would have to ask what Apple and IBM customers have in common. The answer is, not much. And without a tremendous appetite for such a move within both companies' customer bases, a merger of operating systems would be almost sure to fail.

If Microsoft is having trouble getting DOS applications to run effectively under Windows 95 and Windows NT, how much confidence would IBM customers have that a future Mac OS would run their OS/2 applications efficiently? Tell them that their very own Macintosh operating system is coming soon, and they will reexamine all the reasons they aren't moving to Windows, finding perhaps that the old reasons aren't so compelling after all.



Public proddings can bring action from oxen and cattle, but even a limping IBM was going to snort at this encouragement.

Even if there were strategic reasons to merge OS/2 and the Macintosh, the challenge of doing so would be formidable. Such a merger usually means two development teams from different cultures with different power bases must instantly start working together. The bosses can see the overall strategy, but those in the trenches see thwarted ambitions and incipient power moves in the group with which they are being directed to work. Trust and communication fall by the wayside.

Witness the practices of that master of shotgun weddings, Computer Associates International. CA identifies early the key people needed to make a merger work, then retains them and dismisses anyone who can't be given a primary role. Before backbiting can set in, key development talent is motivated and secondary or peripheral talent is fired. It's brutal and brutally effective.

Of course, even CA can't do the impossible. Combining databases, like combining operating systems, means joining complex systems that are based on different organizing principles. When CA acquired Applied Data Research, it added Datacom/DB to an already full stable of database offerings. Applied Data Research was known for technical competence in the heyday of mainframe software, and its development team was unlikely to abandon overnight the insights and convictions that had built several successful product lines. So CA, bowing to what it viewed as the inevitable, fired the Datacom/DB development staff a few months after the deal.

So if you really want to accomplish the near impossible and get Apple and IBM development teams together, do you say so to *The Wall Street Journal* in a way that challenges IBM's commitment to OS/2? Public proddings can bring action from oxen and cattle, but even a limping IBM was going to snort at this encouragement. It promptly rejected the idea, throwing in the fact that it had no intention of manufacturing Macintosh clones, something Markkula hadn't brought up. Getting IBM to produce clones was a former Apple pet project.

Markkula's move has to be interpreted as a last-ditch effort to stir up industry support that might push IBM in his direction. Instead, the only thing that materialized was a fight before Apple's board of directors about the direction of the company.

Apple Chief Financial Officer Joseph Graziano, citing Apple's declining market share, urged the dismissal of Chief Executive Officer Michael Spindler and a friendly acquisition by a company that could continue Apple's technologies. The board declined to act on Graziano's recommendations, and he is resigning at the end of the year.

This is regrettable, because Apple needs real-world thinking, decisiveness and risk-taking for what has been an amateurish, defensive company since the appearance of Windows 1.0. Graziano's presence will be missed, and Apple's switchback strategies will continue to plague it.

Babcock is *Computerworld*'s technical editor. His Internet address is charles_babcock@cw.com.

Inside Lines

We'll keep you posted . . .

Tandem Computers is expected to announce today an agreement with another systems vendor that includes the use of Tandem's ServerNet technology, which uses 300M byte/sec. router hardware and software to move data among computers, communications controllers and peripherals.

For the birds

An employee at Cabletron Systems last week noticed a sizable box-like object in a tree at the switching hub vendor's campus in Rochester, N.H. A closer look revealed that the box was a router from Cabletron archrival Bay Networks that had been made into a birdhouse.

The marrying kind

Following the lead of many imaging and workflow vendors that are buying, merging and otherwise joining together, Nashua, N.H.-based Keyfile is rumored to be looking for a suitor. After Caere's purchase of ViewStar last week, Keyfile is one of the few smaller vendors still competing with the likes of FileNet, IBM and Wang Laboratories.

Have monitor, will crash

Hewlett-Packard has been seeking better tools to monitor Novell NetWare environments from its OpenView management platform. Three vendors demonstrated replacement tools earlier this month, according to consultants. HP is scurrying to dump its server and node manager applications, they say, because these agents can cause NetWare servers to "abend" — Novell's term for abnormal end, or crash — while communicating with OpenView.

Boys will be boys

The fawning and felicitous attention paid to Bill Gates continues to rankle Scott McNealy, head of Sun Microsystems. During a panel discussion last week at Gartner Group's client conference in Orlando, Fla., much was made of the fact that Gates, who appeared from the West Coast via video screen, had just flown in from China. McNealy, who had subjected himself to the wilting humidity of Walt Disney's swamp, wryly noted that he had come from Europe. He wondered why no one seemed to care about his travel schedule. Just one of those mysteries of the Orient, Scott.

Systems operators fear Frankenblunder

Moderators of the NetWire support forums on CompuServe are worried about the announcement that Novell Chief Executive Officer Bob Frankenberg has joined the board of directors at America Online. One forum lit up with concerned postings, one moderator said, because "Frankenblunder" tends to let such involvements sway his focus. The unofficial NetWare supporters indicated they would walk at any hint of a shift from CompuServe to AOL, which they consider a juvenile venue.

During a visit last week to Domino's Pizza headquarters in Ann Arbor, Mich., an IBM representative touted the cross-platform strategy of SystemView, the integrated network and systems management suite coming on four levels of IBM systems — OS/2 to AIX to OS/400 to MVS. A network administrator there said, "I asked about the theoretical possibility of managing the mainframe from a Windows PC, and we all laughed. But that is what they say they're trying to build." If you have something to laugh or cry about, call the Computerworld 24-hour voice-mail tip hotline at (508) 820-8555 or our toll-free number at (800) 343-6474. News editor Maryfran Johnson can be reached by phone at (508) 820-8179 or via the Internet at maryfran_johnson@cw.com.

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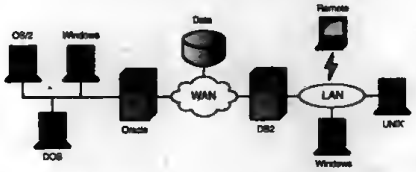
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